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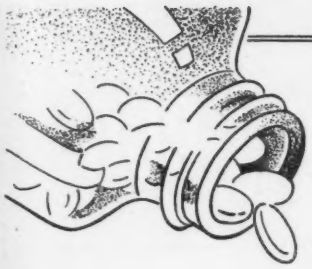

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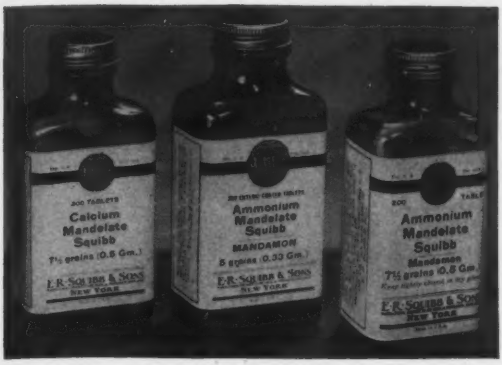

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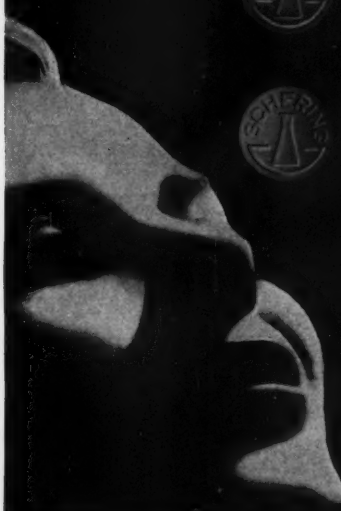


PRANONE*

is Schering's anhydrohydroxy-progesterone, for oral progestin therapy in DYSMENORRHEA, HABITUAL ABORTION, FUNCTIONAL BLEEDING.

*Trade Mark Reg. U. S. Pat. Off.

SCHERING CORPORATION

BLOOMFIELD, NEW JERSEY

B COMPLEX

is more valuable as a therapeutic agent than the individual vitamins

DR. MARTIN G. VORHAUS[1] advocates the use of the entire B complex, even in cases where insufficiency of individual specific B factors is indicated, as it has been found that patients suffering from a deficiency in one of these factors often suffer from an insufficiency of other factors.

DR. NORMAN JOLLIFFE said[2]: "Diets containing a constant amount of vitamin B_1, but rich in the entire vitamin B complex, apparently lead to a greater improvement in objective signs of polyneuritis than diets poor in vitamin B complex."

Brewers' Yeast (Harris)

IN POWDER FORM AND ITS CONCENTRATES –

contains Vitamins B_1-B_2-B_4-B_6 and nicotinic acid with the *mineral yeast cell* salts, essential for certain vitamins to complete their therapeutic purposes.

Bottles of 50, 500, 1000.

Be Sure—Use "B-complex" *as advised by Williams and Spies,[3] who state:*

Even when vitamins B_1, B_2, B_6 and nicotinic acid are all combined, "it cannot fulfill the entire function of the vitamin B-complex."

●

Crystalline Vitamins B_1-B_2-B_6-C and nicotinic acid are offered in tablets of convenient sizes.

1 Report of 174th Ann. Meeting of the Med. Soc. of N. J., New York Times, June 5, 1940.
2 Bul. N. Y. Acad. Med., 15, p. 474.
3 "Vitamin B_1", 1938, p. 133.

THE HARRIS LABORATORIES
TUCKAHOE NEW YORK
SINCE 1919
FOUNDERS of VITAMINS for MEDICAL USE

EVER FEED SMA*?

When you prescribe S.M.A. for the bottle-fed infant you give an easily digested fat, a protein that provides the amino acids essential for adequate nutrition and growth and *lactose*, a physiological carbohydrate, in correct proportion to the nutritional requirements of the normal full-term infant.

In addition, when prepared according to the usual dilution for feeding, each quart of S.M.A. contains:

7500 international units vitamin A activity
200 international units vitamin B_1
400 international units vitamin D
10 mg. Iron

S.M.A. provides easily digested fat and protein of full biological value in correct proportion to the nutritional requirements of the normal full term infant. Therefore, the only carbohydrate in S.M.A. is Lactose . . .

Normal infants relish S. M. A. . . . digest it easily and thrive on it.

" " "

*S.M.A., a trade mark of S.M.A. Corporation, for its brand of food especially prepared for infant feeding—derived from tuberculin-tested cow's milk, the fat of which is replaced by animal and vegetable fats, including biologically tested cod liver oil; with the addition of milk sugar and potassium chloride; altogether forming an antirachitic food. When diluted according to directions, it is essentially similar to human milk in percentages of protein, fat, carbohydrate and ash, in chemical constants of the fat and physical properties.

A SPECIAL PRODUCT

For premature and undernourished infants

PROTEIN S.M.A.
(Acidulated)

Protein S.M.A. (acidulated) is a modified form of S.M.A., intended to meet the special nutritional needs of the premature and undernourished infant and for infants requiring a high protein intake.

Protein S.M.A. (acidulated) is similar to both casein milk and lactic acid milk, but presents additional nutritional elements lacking in both.

S.M.A. CORPORATION • 8100 McCORMICK BOULEVARD • CHICAGO, ILLINOIS

TO SUPPLEMENT INJECTIONS

GIVE MALE SEX HORMONE VIA PERCUTANEOUS ABSORPTION

Neo-Hombreol Dosules are sealed gelatin capsules, manufactured exclusively by us, containing an accurately measured quantity of Neo-Hombreol (testosterone propionate 'Roche-Organon') in a rapidly absorbable ointment base. Thus, for the first time is it possible in a practical way to administer this potent substance by inunction, free from the obvious danger of overdosage inherent in the use of bulk ointments packaged without measurement control of the individual dose. Each Neo-Hombreol Dosule contains 2 grams of ointment representing 4 milligrams of chemically pure synthetic testosterone propionate. Packages of 25.

NEO-HOMBREOL DOSULES

♂ Male climacteric, hypogonadism, and cryptorchidism; experimentally, in impotence and incipient prostatism.

♀ Premenstrual mastopathia, female climacteric, dysmenorrhea, and menorrhagia.

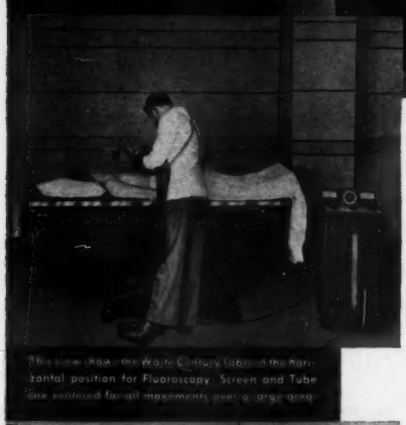
ROCHE-ORGANON, INC. • NUTLEY • N. J.

IN CANADA: ROCHE-ORGANON LTD. • MONTREAL • TORONTO

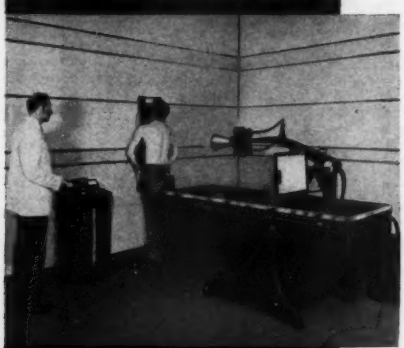
Professional APPROVAL

TO ANTICIPATE YOUR REQUIREMENTS FOR YEARS TO COME—A MODERN SHOCKPROOF RADIOGRAPHIC-FLUOROSCOPIC X-RAY APPARATUS HAS BEEN DESIGNED AND BUILT BY WAITE, THE ORIGINATORS OF SHOCKPROOF EQUIPMENT.

A New HIGH IN X-RAY DESIGN *a New* LOW IN PRICE



This is a view from the Waite Century Table in the horizontal position for Fluoroscopy. Screen and Tube have centered for all movements over a large area.



CHEST RADIOGRAPHY, exposure-time 1/10th of 1 second. Target film distance, 6 feet.

ONLY two years ago, the Waite "Century" shockproof, self-contained Radiographic-Fluoroscopic X-ray Apparatus was presented to the medical profession.

The enthusiastic reception accorded this versatile x-ray equipment is unparalleled in the annals of the x-ray industry. Today hundreds of owners enthusiastically endorse the "Century" as an outstanding contribution to diagnostic procedure.

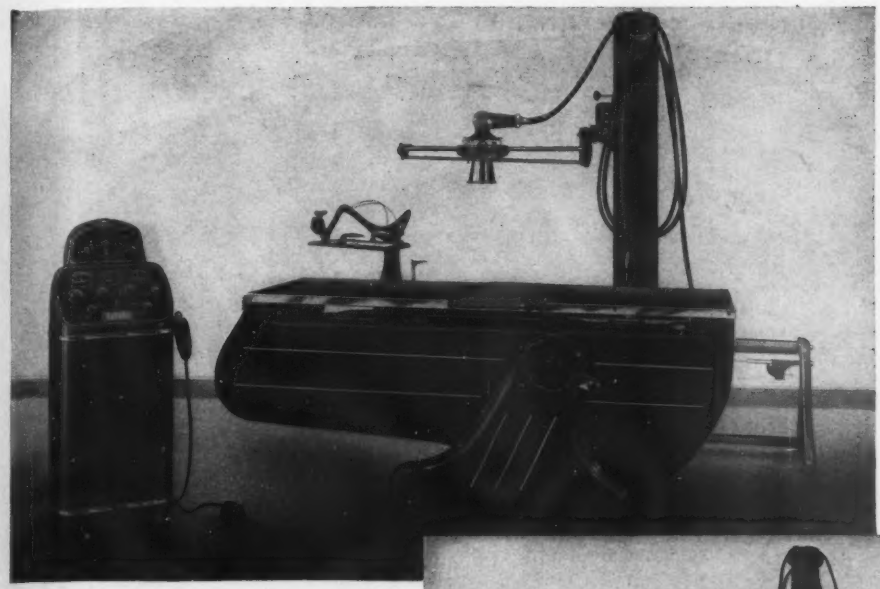
It is a significant fact that more Waite "Century" x-ray units have been bought by the medical profession for x-ray diagnostic purposes than any other similar equipment.

The new "Century", with its many additional and exclusive features, marks it as the most sensational x-ray apparatus in the low price range.

It provides for radiography and fluoroscopy in all positions from Trendelenberg to vertical. It has ample power for fast chest and gastro-intestinal radiography.

Completely shockproof in every particular, with flexibility, power and simplified control for every diagnostic procedure . . . it behooves the modern medical practitioner to see the "Century"!

PICKER X-RAY CORPORATION
300 FOURTH AVENUE, NEW YORK, N. Y.



Waite X-Ray design sets a new "HIGH" with the "ADVANCED SERIES 200"

In the opinion of Roentgenologists throughout the world, the "Advanced Series 200" provides far more flexibility —in every particular—than any other diagnostic x-ray equipment of current design and manufacture.

Not only has greater attention been given to ease of operation but also to comfort of the patient.

Completely shockproof...ample power ...accuracy of control...automatic safety circuits for protection of the x-ray tube... longer life of x-ray tubes and valve tubes ...and a minimum of maintenance, all contribute to efficient diagnostic technique.

Where professional responsibility requires the best, Roentgenologists acclaim the "Advanced Waite Series 200" as the outstanding combination diagnostic x-ray apparatus.

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Gentlemen:
Please mail me your new Bulletin M-401 on the "Advanced Series 200".
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WAITE MFG. DIVISION, CLEVELAND

Specific or Mixed Therapy in Vitamin B Deficiency?

VITAMIN B COMPLEX

Lederle

THE MULTIPLICITY OF THE DEFICIENCY DISEASES often complicated by the confusing and vague character of the symptoms places exact Vitamin B therapy quite out of reach for the present at least.

In the light of present-day facts, it would seem advisable when the deficiency is not clear cut nor easily recognized to give the entire B complex; and when the deficiency is well-defined, to administer the specific substance in sufficient dosages with enough of the whole B complex until the symptoms disappear.

Regarding this point VORHAUS* states:

> "The well-informed clinician will select the individual component to administer according to the clinical picture of the particular patient and in addition will give the whole B complex in adequate amounts until the clinical evidence of Vitamin B deficiency has disappeared."

Lederle's Vitamin B Complex preparations contain all of the recognized factors in high concentration. Based on Thiamin (B_1) and Riboflavin (B_2) content Lederle's capsules and liquid are more economical to the patient than other brands of Vitamin B Complex. Lederle's Vitamin B Complex is available in convenient capsules, in a palatable liquid for oral administration and in a solution for parenteral use.

*Report of the 174th Annual Meeting Med. Soc. of N. J.

PACKAGES:

For Oral Use

Capsules—50, 100, and 500.

Liquid—4 oz., 8 oz., and 12 oz., bottles.

For Parenteral Use

Vials—10 cc.

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℞

Wyeth's

BEWON ELIXIR

A Vehicle that Stimulates the Appetite

Wyeth's BEWON ELIXIR is an excellent vehicle for many medicaments. It is compatible with most drugs.

Standardized to contain 500 International Units of Vitamin B_1 (thiamin chloride) per ounce, BEWON ELIXIR stimulates the appetite and is indicated in Vitamin B_1 deficiencies.

Supplied in Pint and Gallon bottles

JOHN WYETH & BROTHER

INCORPORATED · PHILADELPHIA, PA.

Vision on the march

and what it means to fluoroscopy

No. 3

LIGHTS TO MATCH YOUR MOODS

are the newest development for the home . . . give you choice of brightness and color together with better sight.

15 TIMES MORE EFFICIENT

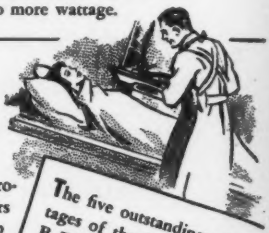
than early street lamps, today's glareless street lamps use no more wattage.

BRIGHT AS DAY ON THE OCEAN FLOOR

Deep sea divers' work is easier because of new-type pressure resisting underwater lamps.

NEW STANDARD OF FLUOROSCOPIC BRILLIANCY

When the Patterson Type B Fluoroscopic Screen was introduced six years ago, it marked an important step forward in fluoroscopy. The great brilliance of this screen, combined with its other outstanding advantages, has enabled roentgenologists to attain a degree of diagnostic accuracy heretofore impossible.



The five outstanding advantages of the Patterson Type B Fluoroscopic Screen are as follows:

1 *Far* more brilliant than even the well-known Patterson "Standard" Fluoroscopic Screen.

2 Greater contrast at lower voltages and milliamperage.

3 Greater visibility of detail.

4 Reduced exposure: less wear and tear on equipment.

5 Easier on the eyes.

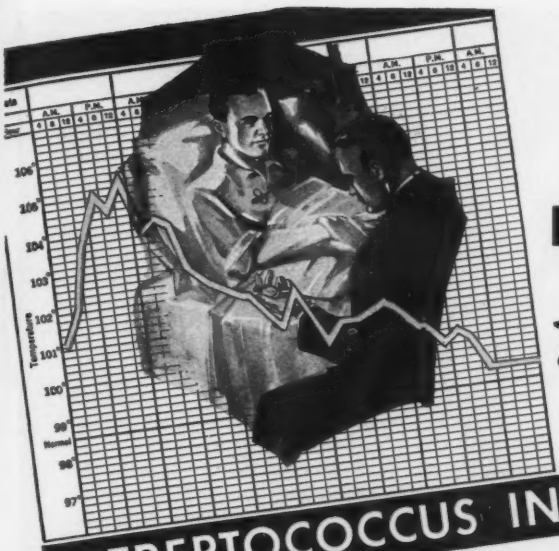
CARPET THAT GLOWS

shows the way down darkened aisles, is a new development in theatre safety engineering.

THE PATTERSON SCREEN COMPANY
TOWANDA, PA., U. S. A.

Patterson *Type B*

THE WORLD'S FINEST
FLUOROSCOPIC SCREEN



The **TIME ELEMENT** *in treatment of*

STREPTOCOCCUS INFECTIONS

• It has been demonstrated by an abundance of clinical experience and by experimental research in many laboratories that the earlier a sulfonamide compound is administered the surer is the response to its chemotherapeutic action.

When timely and adequate treatment is instituted with Neoprontosil in patients with mild or moderately severe streptococcus infection it is often possible to prevent general bacterial invasion with all its complications. In this way recovery may be more quickly brought about and mortality may be reduced.

Supplied: Tablets and capsules for oral use and ampules and bottles for injection.

NEOPRONTOSIL

Trademark Reg. U. S. Pat. Off. & Canada

Brand of AZOSULFAMIDE

Disodium 4-sulfamido-phenyl-2-azo-7-acetyl-amino-1-hydroxynaphthalene 3,6-disulfonate

WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the physician

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For Stubborn Cases...

Petrolagar* with Cascara

Stubborn cases of constipation usually yield to Petrolagar with Cascara.

This preparation provides sufficient laxative effect to help restore normal bowel habit in chronic cases, yet it is mild enough for use in obstetrical cases. Each tablespoonful contains 13.2% of non-bitter aqueous extract of Cascara Sagrada.

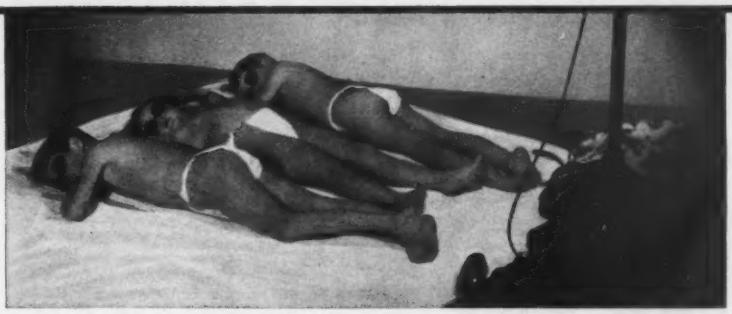
The dose of Petrolagar with Cascara is one tablespoonful two to three times daily—gradually diminished. It has the advantage of exceptional palatability and continued effectiveness despite prolonged use.

Petrolagar with Cascara is available in 16 ounce bottles at all pharmacies and in the special Hospital Dispensing Unit at hospitals.

**Petrolagar—The trademark of Petrolagar Laboratories, Inc., for its brand of mineral oil emulsion, liquid petrolatum 65 cc. emulsified with 0.7 Gm. agar in a menstruum to make 100 cc.*

Petrolagar Laboratories, Inc. • 8134 McCormick Boulevard • Chicago, Illinois

BOTH *YOU* AND *YOUR PATIENTS* BENEFIT!
from the installation of G-E ultraviolet equipment.



YOU *know* what advantages accrue through the administration of ultraviolet radiation; medical literature has informed you.

From the response of your patients, your gain (both clinically and economically) should be considerable.

But, if the equipment you are using or contemplate purchasing is one whit less efficient and modern than the G-E Model "F" Ultraviolet Lamp, you deprive both yourself and patient of full value.

You see, the G-E Model "F" Lamp is an outstanding generator, producing a type of radiation especially rich in those spectral bands known to be most beneficial. This apparatus is rather a recent development—something new—a contribution to electromedicine with which you should be acquainted.

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SULFUR FOAM
APPLICATORS
For the prevention or treatment of scabies, according to the method of Major A. Stokes, M.D., U. S. Navy
Each applicator contains 19 grains of sulfur in active form
JOHN WYETH & BROTHER, INCORPORATED
PHILADELPHIA, PA.

For SCABIES

and other External Uses of Sulfur

Wyeth's
SULFUR FOAM APPLICATORS

Whenever the external application of sulfur is indicated, as in scabies, Wyeth's SULFUR FOAM APPLICATORS provide therapeutic effectiveness with less sulfur than is required in grease ointments. Thus the possibility of sulfur dermatitis is diminished.

No Grease—No Mess

The discomfort and mess of greasy ointments are eliminated when SULFUR FOAM APPLICATORS are prescribed. Three applicators are effective in treating scabies. All contacts should use one applicator as prophylaxis.

SUPPLIED IN PACKAGES OF THREE APPLICATORS

. . . JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA, PA. . . .

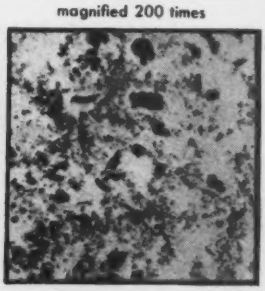
These foods... specially homogenized... are extra easy to digest

Statement accepted by the
A.M.A. COUNCIL ON FOODS

Strained Vegetables magnified 200 times

Note the large bundles of coarse fibers, the many large cells, the closely packed starch granules. Contrast with the photomicrograph at the right, showing Libby's specially homogenized Vegetables. (Process patented U. S. No. 2037029.) No coarse fiber or large cells; small starch particles uniformly distributed.

Libby's Homogenized Vegetables magnified 200 times



As shown here, special homogenization breaks up cells, fibers and starch particles, and releases nutriment for easier digestion. Libby's Baby Foods—vegetables, fruits, soups, cereal—are first strained, then specially homogenized. This exclusive double process makes them extra smooth, extra fine in texture.

NOTE: For detailed information about Libby's specially homogenized Baby Foods—average analyses, average vitamin potencies—write on your letterhead or prescription blank to Libby, McNeill & Libby Research Laboratories, Dept. SM-100 Chicago.

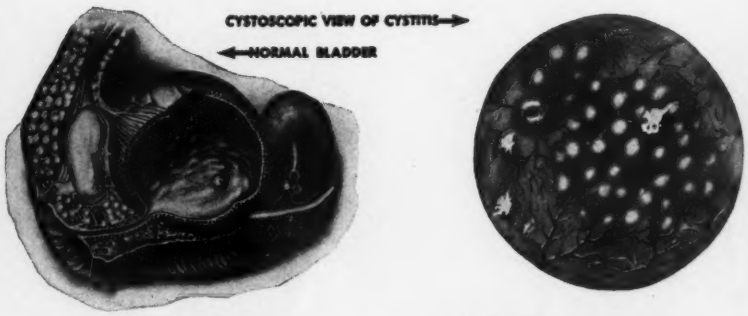
New! . . . Libby's Chopped Foods for older babies (10 Varieties)

Copr. 1940 by Libby, McNeill & Libby

PYRIDIUM

(REG. U. S. PAT. OFF.)

For Prompt Symptomatic Relief in Common Uropathies



- CYSTITIS
- PYELITIS
- PROSTATITIS
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More than a decade of published literature has demonstrated the following advantages of Pyridium:

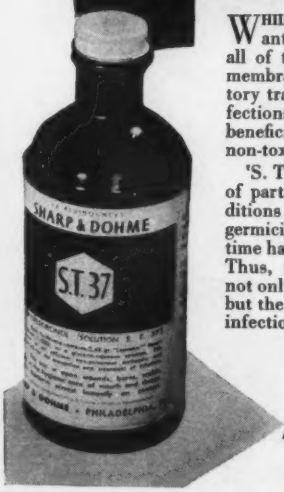
1. Safety
2. Chemical stability
3. Minimal toxicity
4. Ready absorbability
5. Elimination by the urinary tract
6. Analgesic effect on the urogenital mucosa
7. Effectiveness in the presence of either acid or alkaline urine.
8. Effectiveness without special dietary regulation
9. Convenience of peroral administration
10. Availability as the 1% aqueous solution for use in infants and young children

PYRIDIUM
TRADE MARK
(Phenylazo-Alpha-Alpha Diamino Pyridine Mono-Hydrochloride)
A decade of service in urogenital infections

Pyridium is the United States Registered Trade Mark of the product manufactured by Pyridium Corporation

MERCK & CO. INC. *Manufacturing Chemists* RAHWAY, N. J.

An Aid to the Natural Defense Mechanism . . .



WHILE it is obvious that no antiseptic will completely kill all of the bacteria found on the membranes of the upper respiratory tract, nevertheless, many infections of the nose and throat are beneficially treated by the use of a non-toxic, non-irritating antiseptic.

'S. T. 37' Antiseptic Solution is of particular value in these conditions because it possesses high germicidal activity, but at the same time has a very low tissue toxicity. Thus, many of the bacteria are not only killed by chemical means, but the defense mechanism against infection of the tissues themselves is not disturbed. In addition, 'S. T. 37' Antiseptic Solution exerts a mild surface analgesic effect.

Thus, the therapeutic action of 'S. T. 37' Antiseptic Solution is threefold when applied to painfully inflamed tissues such as are found in acute naso-pharyngitis, pharyngitis, tonsillitis and laryngitis:

1. **It exerts a marked bactericidal action.**
2. **The normal physiological activities of the tissues are not affected.**
3. **Pain is relieved by its mild surface analgesic action.**

Sharp & Dohme

'S. T. 37' ANTISEPTIC SOLUTION

(Formerly known as Hexylresorcinol 'Solution S.T. 37')

Everything OK in the OB

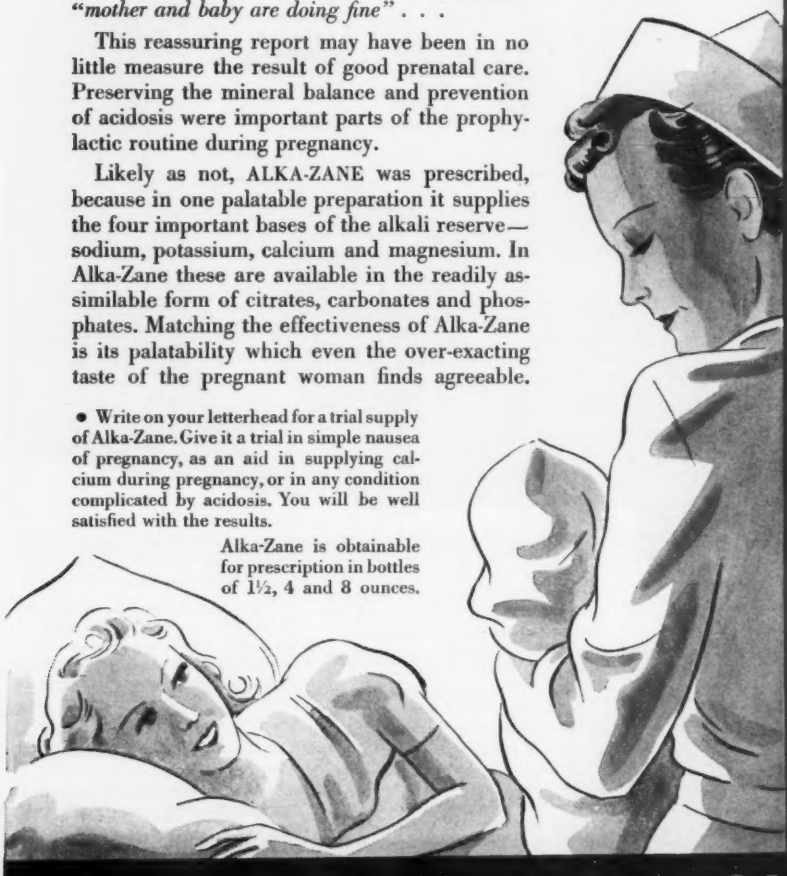
Another newcomer in the OB, and "mother and baby are doing fine" . . .

This reassuring report may have been in no little measure the result of good prenatal care. Preserving the mineral balance and prevention of acidosis were important parts of the prophylactic routine during pregnancy.

Likely as not, ALKA-ZANE was prescribed, because in one palatable preparation it supplies the four important bases of the alkali reserve—sodium, potassium, calcium and magnesium. In Alka-Zane these are available in the readily assimilable form of citrates, carbonates and phosphates. Matching the effectiveness of Alka-Zane is its palatability which even the over-exacting taste of the pregnant woman finds agreeable.

• Write on your letterhead for a trial supply of Alka-Zane. Give it a trial in simple nausea of pregnancy, as an aid in supplying calcium during pregnancy, or in any condition complicated by acidosis. You will be well satisfied with the results.

Alka-Zane is obtainable for prescription in bottles of 1½, 4 and 8 ounces.



ALKA-ZANE for ACIDOSIS

WILLIAM R. WARNER & CO., INC. • 113 W. 18th ST., NEW YORK CITY

SEDENTARY

WITH the winter months come the inactivity of indoor life—improper diet—little or no exercise—and the accompanying indications of constipation.

It is then that

MUCILOSE

a bland, non-irritating, bulk-producing agent, brings relief as an assistant in proper evacuation and the reestablishment of normal bowel movement.

Mucilose, in the therapy of constipation and spastic colon, produces a normal condition of the fecal content by controlling "water balance," i. e., holding water in the feces and increasing responsiveness of the physiologic mechanism of peristalsis.

A hemicellulose (vegetable gum) specially prepared from the Plantago loeflingii. Does not have a tendency to cause fermentation in the bowel. Mucilose Flakes; Mucilose Granules; Mucilose Granules Improved.

CYVERINE HYDROCHLORIDE

For relief of colic or spasm. An effective vaso-dilator that relaxes smooth muscle. Inhibits peristalsis.

FREDERICK STEARNS & COMPANY • DETROIT, MICHIGAN

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Please send me a clinical supply of
Mucilose Granules ☐ Cyverine ☐

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Good Solid Flesh is

characteristic of *Similac* fed infants

A powdered, modified milk product especially prepared for infant feeding, made from tuberculin tested cows' milk (casein modified) from which part of the butterfat is removed and to which has been added lactose, vegetable oils and cod liver oil concentrate.

ACCEPTED AMERICAL MEDICAL ASSN.

SIMILAC SIMILAR TO BREAST MILK

M & R DIETETIC LABORATORIES, INC. • COLUMBUS, OHIO

FROM SCIENTISTS OF MANY NATIONS Comes the Same Report:

UNITED STATES

"Copper catalyses the utilization of iron, accelerating the conversion of inorganic iron into hemoglobin, and thereby speeds up the process of cell maturation." *Kugelmass, I. N., N. Y. State Jour. of Med. Dec. 1, 1939. pp 2202-2203.*

CANADA

"In a series of 10 adult cases, 5 grs. daily of Blaud's was tried with but partial success. When the amount of Blaud's was reduced and 1.5 mgms. of copper sulphate added, a spectacular hemoglobin response was recorded." *Mills, E. S., Can. Med. Assn. Jour. 22:175. 1930.*

COPPER + IRON Speeds Hemoglobin Increase *in* NUTRITIONAL ANEMIA!

SCOTLAND

"Metabolismstudies on nine infants revealed (a) that the administration of copper enhances the conversion into hemoglobin of iron stored in the tissues, and (b) that iron given in doses so small as not materially to raise the hemoglobin content of the blood, can, by subsequently giving copper, be mobilized and converted into hemoglobin." *Hutchison, Jas. H. Quarterly Jour. of Med. VII, 27 July 1938.*

SOUTH AFRICA

"Iron plus copper administration resulted in a very dramatic response of general blood regeneration as compared to the insignificant low and slight response of iron therapy alone." *Latsky, Johannes M., S. A. Med. Jour. XIII, 13, 463-464. July 8, 1939.*

The foregoing are typical of the clinical and general experience of physicians who use copper with iron in secondary and nutritional anemias. Such evidence confirms the work of Prof. E. B. Hart and his associates at Wisconsin who first showed that copper is essential to utilization of iron for hemoglobin building. Speedier recovery, higher hemoglobin levels, smaller dosage, reduction of gastro-intestinal upsets, and better patient cooperation may be anticipated by using Foundation Licensed Copper-Iron Compounds.

Manufacturers of Copper-Iron Compounds, licensed by the Wisconsin Alumni Research Foundation are entitled to use this Seal on their products and in advertising. All licensed products are periodically tested by the Foundation Laboratory for Copper and Iron, whether or not the Seal appears thereon.

Approved for COPPER-IRON upon periodic tests

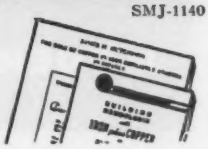
WISCONSIN ALUMNI RESEARCH FOUNDATION MADISON WISCONSIN

Please send me the Hutchison Studies, also "Building Hemoglobin," a Bibliography with 74 references, and a list of licensed products. SMJ-1140

Name.....

Address.....

City..... *State*.....



Hematinic Plastules

EFFECTIVE IN SMALL DOSES

● Why massive doses of iron? The same, or even better, results are obtained with Hematinic Plastules* in small doses. Prompt and gratifying results are obtained in most cases of secondary anemia with daily doses of only three Hematinic Plastules Plain.

Assure the patient all the advantages of a modern iron therapy with economy, efficiency and ease of administration—prescribe Hematinic Plastules.

℞ Hematinic Plastules Plain or
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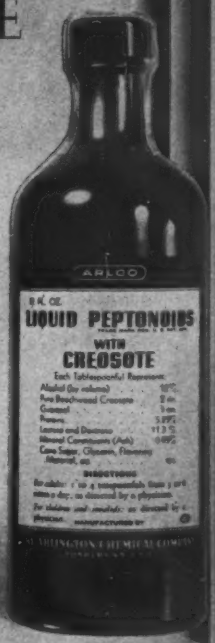

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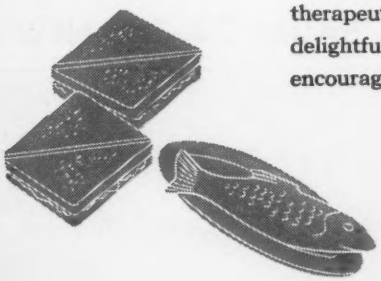

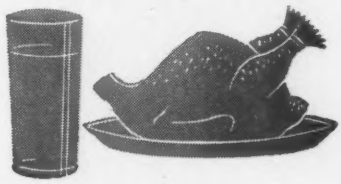

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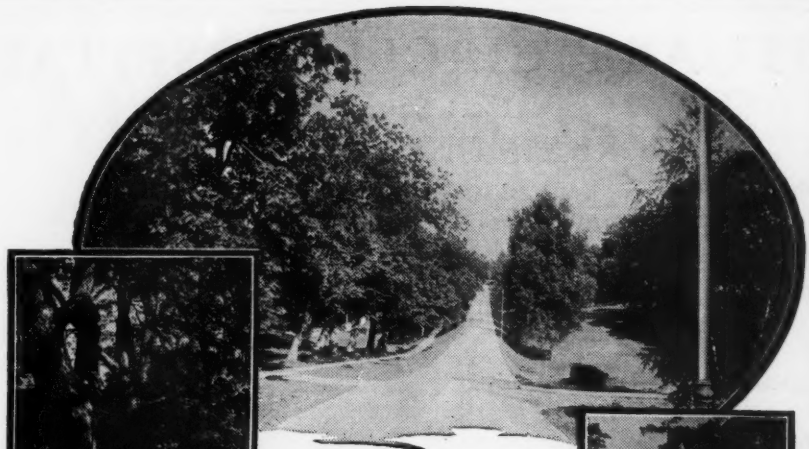

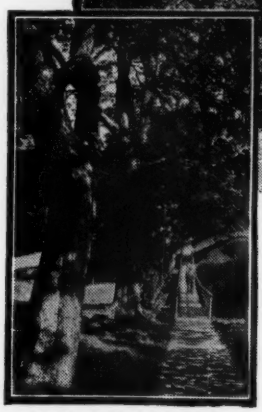

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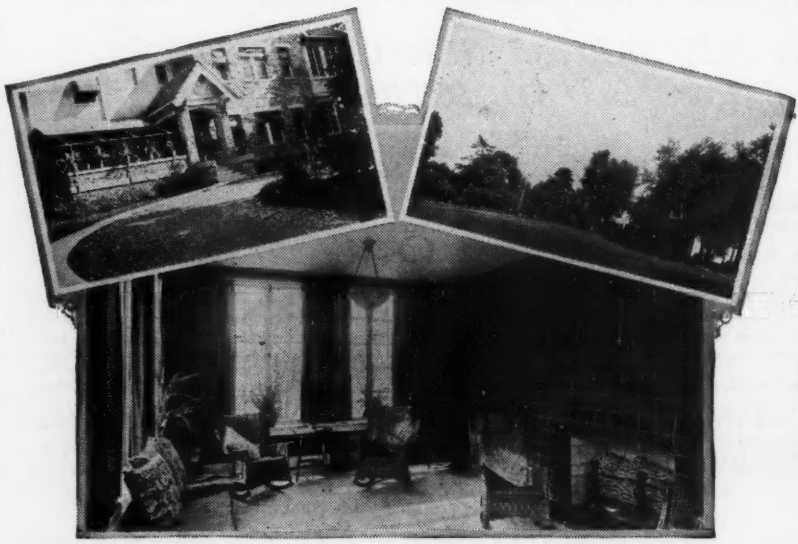

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PUBLISHED MONTHLY BY THE SOUTHERN MEDICAL ASSOCIATION AT BIRMINGHAM, ALA.
Volume 33 NOVEMBER 1940 Number 11

RETICULO-ENDOTHELIOSIS*

By JOHN H. LAMB, M.D.
and
HUGH A. STOUT, M.D.
Oklahoma City, Oklahoma

The term reticulo-endotheliosis is appearing in the dermatologic literature with a variation in meaning and usage which may lead to confusion. Reticulo-endotheliosis denotes any hyperplasia, neoplasia or so-called metaplasia which arises from the reticulo-endothelial cells of the lymphoid tissue in the skin, lymph nodes, spleen and bone marrow.

The cells which make up the reticulo-endothelial system are probably derived from the primitive mesenchyme. They form the stroma of the lymphoid and myeloid tissues. They form the tissue histiocytes which have a tendency to phagocytosis of certain lipoids. The monocyte also arises from the primitive reticulum cell from which the macrophage and Sternberg cells probably have their origin. The monocytes may be found in the connective tissue and may be maintained at a fairly constant level in the circulating blood. The modified dualists (Sabin and Doan) recognize this monocytic cell to be a third type of leukocyte. These observers recognize three types of leukocytes, each with its own characteristic hematopoietic tissue which arises from the common primitive reticulum cell, the granulocytes arising from the myeloid tissue, the lymphocytes from the lymphoid tissue and the monocytes from the reticulo-endothelial tissue.

In studying the hyperplasias and neoplasias of the reticulo-endothelial cells as one large group there is suggested a definite relationship between these two dissimilar pathologic conditions. As the various entities are examined this concept is unfolded in a new and interesting way.

Reticulo-endotheliosis in the sense of a hyperplasia or metaplasia in which the reticulo-endothelial cells exhibit more the function of phagocytes or histiocytes may include the group of lipid reticulo-endothelioses, such as:

(1) Hand-Schuller-Christian's disease

(2) Gaucher's disease

(3) Niemann-Pick's disease

(4) Juvenile xanthoma, xanthoma tuberosum, diabetic xanthoma

(5) Lipoid histiocytosis (nevoid type), nevo-xantho-endothelioma

(6) Reticulo-endotheliosis (Sweitzer) (Sachs), transitional or intermediate type.

Lane[1] presented four cases of true Hand-Schuller-Christian's disease in which there was widespread proliferation of large mononuclear cells with a phagocytosis of lipoid material without the presence of monocytic neoplasia.

One of us[2] reported a case of lipoid reticulo-endotheliosis which was suggested to be a connecting link between reticulo-endotheliosis and Hand-Schuller-Christian's disease. It was suspected that in this patient's early history there was a systemic involvement with reticulo-endothelial metaplasia as in Hand-Schuller-Christian's disease which caused the enlarged liver, the lung involvement and interference with the heat regulating mechanism. There was no involvement of the membranous or long bones, nor was there any exophthalmos or diabetes insipidus. There was an apparent spontaneous disappearance of the tumors of the scalp and body, associated with an involution of the systemic endothelial hyperplasia. The patient continued to grow normally and remained in good general health.

Sweitzer[3] reported a case with fatal outcome in which microscopic studies at autopsy proved reticulo-endotheliosis of a general systemic type with clinically no exophthalmos or diabetes in-

*Read in Section on Dermatology and Syphilology, Southern Medical Association, Thirty-Third Annual Meeting, Memphis, Tennessee, November 21-24, 1939.

sipidus, both common symptoms of Hand-Schuller-Christian's disease. There was involvement of the membranous bones of the pelvis and the finding of stainable lipoid in some of the skin tumors was suggestive of a close resemblance to Hand-Schuller-Christian's disease, although the finding of large numbers of highly proliferative immature monocytic cells also simulated an aleukemic form of monocytic leukemia reported by Sachs.[4] These patients presented by Sweitzer and Sachs seem to belong in an intermediate group between this more or less benign group and the malignant reticuloses.

Waugh[5] recognized this intermediate, transitional variety of systemic hematopoietic proliferation and promulgated the idea of the term "katoplasia," which would bridge the gap between the hyperplastic and the neoplastic groups.

Reticulo-endotheliosis of the neoplastic type is the primary interest of this discussion and the clinical material to be presented is included in this group. Weidman[6] and R. P. Custer include in this group of lymphomas which are derived from the reticulo-endothelial cells (a) monocytic leukemia (Schilling); (b) lymphosarcoma, reticulum cell type; (c) Hodgkin's disease; (d) aleukemic reticulosis; (e) leukemic reticulosis.

Further additions to this group seem to include patients reported by Lane,[7] Hazel and Weidman[8] with poikiloderma atrophicus vasculare in which later the skin changes were apparently secondary to underlying reticulo-endothelial neoplasia. Lane states that "the tumors are probably Hodgkin's disease." Hazel and Weidman describe a reticulo-endotheliosis developing *in situ*.

Three cases have been observed demonstrating malignant phases of the reticulo-endothelial cells of the skin, blood and lymph nodes.

MONOCYTIC LEUKEMIA: SCHILLING TYPE

Monocytic leukemia of the Schilling type is an abnormal increase in immature monocytes in the circulating blood which are produced by the reticulo-endothelial system. This is to be distinguished from the Naegeli type of monocytic leukemia on the basis of hemocytologic studies. The diagnosis of the Naegeli type of leukemia is made by the presence in the peripheral blood of the myeloblast which is the stem cell or parent cell and is peroxidase-positive. In contrast the monocyte of the Schilling type has the chromatin strands which seem to bend on transition and form a distinct grooving which is a more or less constant feature and is peroxidase-negative.

Loveman[9] described a case of monocytic leukemia (Schilling), with study of the cutaneous manifestations and a complete discussion of the histologic picture.

Lynch[10] gives a very comprehensive review of the entire group of reticulo-endothelioses in which he stresses similarity in the pathologic changes in the cutaneous lesions of monocytic leukemia and aleukemic reticulo-endotheliosis and suggests that the latter is an aleukemic manifestation of monocytic leukemia. We wish to report a case of monocytic leukemia of the Schilling type with cutaneous manifestations.

Case 1.—Mr. D. V. H., 72 years old, white, was seen December 6, 1936, apparently in good health, complaining of spots on the face and an eruption on the hands and wrists. Previous treatment consisted of radiation with ultraviolet rays and calcium tablets by mouth. He thought that the eruption on the hands had been caused by weeds and dust contacted on the golf course, but did not understand the splotching on the face. On December 8, 1936, physical examination showed a generally dry, scaly skin. On the hands and arms there were distributed multiple excoriated papules simulating prurigo of Hebra type. The palms contained pigmented red macules the size of a small English pea to that of a dime. On the face there were numerous violaceous, purpuric macules much larger in size than on the palms.

The patient did not show much improvement with superficial x-ray therapy and moist packs applied to the hands and arms. He was admitted to St. Anthony's Hospital on December 27, 1936, at which time the purpuric, macular eruption on the face had spread to the neck, and there was a vesico-bullous eruption on the hands and arms. Some of the vesicles on the hands were 2 or 3 cm. in width with an erythematous base. He gradually developed a diffuse, exfoliative erythroderma and a peculiar hyperpigmentation was noted on the entire skin surface. In spite of x-radiation the pruritus became almost intractable and caused him to seek consultation elsewhere. A blood count on January 15, 1937 was as follows: leukocytes, 26,400; differential, neutrophils 25, non-filamented 3, filamented 22, small lymphocytes 45, large lymphocytes 19, eosinophils 4, lymphoblasts 5. The hematologic picture was that of lymphatic leukemia with marked immaturity of some of the lymphocytes.

Histologic examination of the skin of the arm showed the epithelium to be edematous throughout and only a thin scale of hyperkeratosis was noted. There was a marked cellular infiltration just beneath the rete pegs. There were thinly scattered, free, immature mononuclear cells as well as many irregularly shaped clusters of closely packed similar cells. The nuclei were fairly large, hyperchromatic, indented and showed occasional leukemia cells, but there was also a suggestion of foci of origin of these cells in the skin.

The diagnosis was monocytic leukemia (Schilling).

The patient went to the Mayo Clinic and has been reported[11] as follows: "Examination at the Clinic revealed generalized exfoliative dermatitis. There were diffuse infiltrations in the skin, hemorrhagic bullae on the hands and feet, patches of lichenification and scat-

tered small nodules on the legs. Impetiginous lesions occurred about the mouth and nose. There was a marked, diffuse, bronze-like pigmentation of the entire skin. Leukocytes numbered 67,400 for each cubic millimeter of blood; reticulo-endothelial cells predominated. The hemocytologic picture was that of monocytic leukemia of Schilling. The patient responded well to two courses of local and systemic roentgen treatment. The last of December, 1937, Dr. H. Michelson, of Minneapolis, reported that the patient was gradually failing. The hemocytologic diagnosis had remained that of monocytic leukemia of Schilling (leukemic reticulo-endotheliosis). The patient died January 22, 1938. No postmortem examination was performed."

Early in the course of this disease this patient exhibited features that were typical of lymphatic leukemia with slight immaturity of the cells, finally terminating with a blood picture in which reticulo-endothelial cells predominated. This gives strong evidence of the close relationship of the lymphocytes and reticulo-endothelial cells to the same parent cell.

A case reported by Mitchell[12] also brings out this point. Early in the course of his patient's illness the blood contained a lymphocyte count as high as 82 per cent with no monocytes present. Late in the course considerably larger numbers of lymphocytes, neutrophils and myelocytes were present than of mature monocytes. Forkner[13] does not agree to including monocytic leukemia under the reticulo-endothelioses, but suggests to show that it be derived neither from the myelocytic nor lymphocytic series, and the term monoblastic group be established. But since Sabin and her associates support with strong evidence the theory that the monocytes exist as an independent strain of cells and with other evidence pointing toward their derivation from the cells of the reticular syncytium, we believe that monocytic leukemia should be classified as a reticulosis or reticulo-endotheliosis.

Diagnosis of the skin manifestations of the leukemias both histologically and clinically may sometimes be difficult, as the dermatologic lesions seem to be varied and are hard to correlate with the blood pictures. In myelogenous leukemia cutis the general structure histologically may resemble that of monocytic leukemia, but the presence of immature and mature eosinophilic granulocytes is an important differential point. Epstein and MacEachern[14] feel that cutaneous manifestations of myeloid leukemia and monocytic leukemia are similar and that in lymphatic leukemia the incidence was fairly well

Fig. 1
Low power of monocytic leukemia showing infiltration of monocytic cells in the corium.

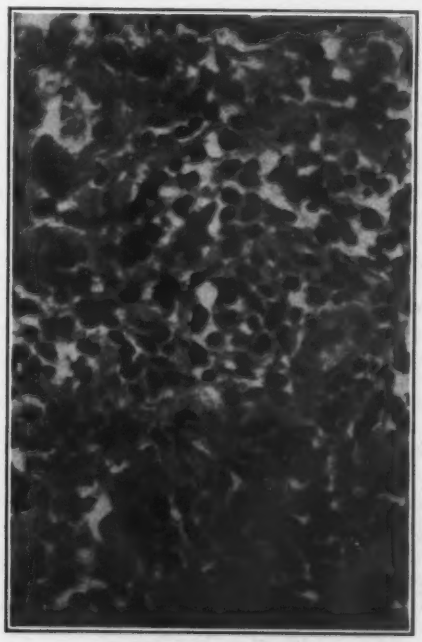

Fig. 2
Showing monocytic infiltration.

distributed between nodules, plaques and exfoliative erythroderma.

Montgomery and Watkins[15] emphasized the fact that exfoliative dermatitis was a frequent cutaneous manifestation in monocytic leukemia, contrary to Epstein and MacEachern, who felt it was diagnostic of Hodgkin's disease.

Loveman stated that the cutaneous manifestation of lymphatic leukemia is more common than that of myeloid leukemia, and that the disease may begin with indurated, eczematoid plaques similar to those in early mycosis fungoides.

Purpura and other hemorrhagic eruptions are by far the most common cutaneous lesions seen in leukemia. This is probably due to a lowering of the number of platelets in the circulating blood. Epstein and MacEachern state that out of 161 patients with leukemia, 27.9 per cent displayed hemorrhagic tendencies. In comparison with these figures, dermal or subdermal hemorrhages were seen in only 2.5 to 3.5 per cent of the patients with Hodgkin's or with lymphosarcoma. Pusey's[16] description of the progress of cutaneous lesions in leukemia cutis tends to fit into the picture exhibited by our patient, first, petechiae, second, vesiculo-bullous lesions, followed by generalized exfoliative dermatitis and, in time, extreme pruritus.

As far as treatment is concerned, low and high voltage x-ray therapy is indicated when the process is not too acute. It is believed that x-rays do not enhance the prognosis as to longer life expectancy, and sometimes may hasten a fatal termination. Nevertheless, cases with cutaneous manifestations give a marked response to x-rays both in the blood picture and in a feeling of well being, as well as the relief of pruritus. Arsenic gives only temporary relief. It is felt that superficial x-ray therapy should be given with enough screening that the dose can be repeated for the relief of pruritus over a prolonged course of time. X-rays are contraindicated in (a) cases with a marked neutropenia and (b) extremely lowered red blood cell count.

ALEUKEMIC RETICULOSIS (RETICULAR CELL SARCOMA)

The second case to be presented, although it could be classified under the aleukemic reticuloses, presents a different histologic picture. Careful histologic study suggested a diagnosis of reticular cell sarcoma,[17] even though the reports of skin manifestations of this entity have been rather rare in the literature. The term "reticular cell sarcoma" is used here to denote a fairly adult tumor, not highly malignant, but definitely arising from the reticulum of the lymph nodes, skin, and bone marrow, and producing a moderate amount of well-formed reticulum (Ehrlich and Gerber, *Fig. 2 C*). It is not comparable to the highly malignant reticular cell sarcoma or stem cell sarcoma in which the cells are more primitive, anaplastic, and produce essentially no well-formed reticulum (Ehrlich and Gerber, *Fig. 1 A*). This case is presented as a neoplastic reticulosis, reticular cell sarcoma in type.

Case 2.—B. S., colored male, aged 65, was first seen October 9, 1935, with a generalized lichenoid eruption which was intensely pruritic. At this time he had numerous large swellings about the neck. A diagnosis was made of lichenified eczema and lymphoblastoma, and, since he had a positive Wassermann reaction, antisyphilitic treatment was suggested. There was some relief of pruritus during arsenotherapy, but no reduction in the glands of the neck. He was seen again in June, 1938, at which time the generalized lichenoid dermatitis was much worse and all the lymph nodes were enlarged. His Wassermann was negative, Kline two plus. He was sent to the city venereal clinic, where he was given several courses of neoarsphenamine and bismuth. In June, 1939, he was again seen and biopsies

Fig. 3
Reticular cell sarcoma showing enlarged submental and anterior cervical glands.

were taken from the arms, back and enlarged lymph nodes of the neck.

Examination showed a fairly well developed colored man whose skin had the appearance of "hanging on" his body, having lost its elasticity. There was a leathery texture with bulging of the body folds. The submaxillary, anterior and posterior cervical lymph nodes were enlarged and hard to palpation. The axillary and inguinal nodes were slightly enlarged; the spleen was not palpable. The skin on the legs had a lichenoid appearance. The arms and back were studded with lichenoid papules with numerous white scars and excoriations.

Microscopic examination of an infiltrated mass in the neck showed a thinning of the rete pegs of the epidermis with intracellular and extracellular edema. There was marked hyperkeratosis and a slight amount of parakeratosis. In the cutis there were many irregularly shaped, confluent masses of very cellular tissue, just beneath the rete pegs and extending in many instances deep into the corium. These deeper strands were for the most part perithelial. In the larger cellular masses just beneath the epidermis the cells were quite uniform in staining reaction, showing a very distinct fibrillar, reticulated, interconnecting cytoplasm between the nuclei. The nuclei were fairly uniform in appearance. They varied in size from approximately 8 to 15 micra in diameter, were distinctly basophilic, hyperchromatic and leptochromatic, containing several dark-staining, fairly large, irregularly-shaped chromatin granules interconnected with fine cromatin strands. The nuclei were for the most part ovoid with one or more indentations in the nuclear outline, and quite often these indentations were deep. There was a moderate number of mitotic figures. Very few leukocytes, lymphocytes or foreign infiltrating cells were present; an occasional myelogenous eosinophil was present. Very rarely were multinucleated tumor cells seen, and nothing in the picture suggested Hodgkin's disease. The cells were of the reticular cell type.

The diagnosis was subleukemic reticulosis, reticulum cell sarcoma type.

Roentgenograms of the entire body skeleton revealed no areas of rarefaction. Sternal aspiration for smears showed 70 per cent lymphocytic infiltration with moderate panhypoplasia, the ratio being about normal between myelogenic and erythrogenic cells. Blood counts were as follows:

October 9, 1935		August 25, 1939	
R.B.C.	4,720,000	3,220,000	
W.B.C.	15,600	8,700	
Hemoglobin per cent	90	68	
Neutrophils	80	52.5 (non-filamented 19.5, filamented 33)	
Stab	2	Lymphocytes	12
Transitional	3	Monocytes	2
Small lymph	14	Eosinophils	33.5
Large lymph	1	Basophils	0

October 3, 1939		October 26, 1939	
R.B.C.	3,710,000	3,910,000	
W.B.C.	12,100	9,100	
Hemoglobin per cent	90	90	
Neutrophils (Non-filamented 11, filamented 50)	61	47 (non-filamented 7, filamented 40)	
Lymphs	14	17	
Eosinophils	25	26	
Basophils	0	1	
Monocytes	0	0	

Fig. 4
Reticular cell sarcoma showing lichenoid papules of the arm with skin of leathery texture.

This case clinically resembles Hodgkin's disease in many ways, but histologically the multinucleated cells were not found; at no time had the spleen been palpable, but the marked eosinophilia is interesting. It has previously been taught that eosinophilia is peculiar to Hodgkin's disease, but in recent years many cases of Hodgkin's disease have been reported without eosinophilia. This suggests that the eosinophilia is not necessarily related to the neoplasia of the lymphoid tissue. Toxins of various kinds are said to produce an eosinophilia. Hansel and Amorzurrutia[18] were able to cause a metaplasia of polymorphonuclear leukocytes to eosinophils in the test tube by the addition of a plant poison, saponin.

HODGKIN'S DISEASE

Shelmire,[19] in an excellent review of the cutaneous manifestations of Hodgkin's, differentiates the toxic manifestations, namely: (a) pru-

ritus, (b) pigmentation, (c) prurigo-like lesions, (d) bullous and pemphigoid, (e) hemorrhagic, (f) trophic, and the specific, that is, infiltration nodules or gumma-like ulcerations.

Epstein and MacEachern felt the characteristic cutaneous lesion to be exfoliative erythroderma. This occurred in 66.6 per cent of the patients presenting cutaneous lesions. Senear and Caro[20] reported a case of Hodgkin's disease with ulcerative type of lesions. The patient presented here has the former type of eruption and is included to stress the fact that Hodgkin's disease is a reticulosis in which not only the lymph nodes are involved, but blood and skin may also become affected.

Case 3.—Mr. C. H. L., 43 years old, white, three years prior to admission had an appendectomy, following which he continued to have sharp, cutting pains in the lower right side. One year later he noted the appearance of a nodule in the right groin. This gradually increased in size. He came to the outpatient department, where a tentative diagnosis of femoral hernia was made, and admission advised.

Physical examination showed a well-developed, well-nourished white man, 43 years old, not acutely ill. The skin of the entire body was very dry and had somewhat the appearance of ichthyosis. There was a slight enlargement of the anterior and posterior cervical nodes, especially on the left. There was a somewhat lobulated mass in the right groin measuring 4x4 cm. A few smaller nodules extended below Poupart's ligament into the upper medial third of the thigh. An indefinite mass was palpated in the left upper quadrant of the abdomen and pressure over it caused extreme pain. The remainder of the examination was essentially negative.

Examination of the urine was negative. The blood showed normal findings except for 22,100 white cells and 94 per cent polymorphonuclear leukocytes.

On the third hospital day biopsy of the mass in the groin was done. A number of matted, large, gray nodes were found. There was a considerable amount of fibrosis. There were many lymphocytes, most of which appeared immature, and a number of proliferative reticular cells. In practically every high power field there were a number of multinucleated tumor giant cells of the Reed-Sternberg type. A section through one of the nodes showed masses of these multinucleated cells so abundant that they were consistent with the picture of Hodgkin's sarcoma.

The diagnosis was Hodgkin's disease.

The patient was given a course of 4,200 r of x-rays divided over the right groin and thigh, axillae and cervical nodes. The nodes in the groin diminished in size rapidly. The patient improved generally and was discharged January 7, 1937.

His second admission occurred June 2, 1939. Soon after the patient's discharge the nodes in his groin again began to enlarge slowly. He gradually lost weight and strength. One year before readmission he developed a persistent diarrhea. He came to the outpatient department April 26, 1939, with large nodes in the neck, axillae and groin. Dermatitis with extreme pruritus, gingivitis, stomatitis and raw tongue were also complaints. Admission was recommended for further x-ray therapy.

Physical examination showed a thin, white man with a dry, exfoliative erythroderma. Enlarged nodes were palpated in the neck, axillae and groins. There was tenderness to palpation over the entire abdomen, but no masses were made out. The remainder of the examination was essentially negative. Roentgenograms of the chest were negative. Examination of the urine was negative. The blood showed a red cell count of 3,570,000, 70 per cent hemoglobin, 16,400 white cells, 87 per cent polymorphonuclear leukocytes. Stool examinations were negative for blood and parasites.

The patient was given 1,200 r of palliative x-ray therapy and discharged June 30, 1939, moderately improved. Each time improvement of the lymph node involvement brought alleviation of pruritus and improvement in the skin manifestations.

He returned to the outpatient department again November 3, 1939. Since his discharge the diarrhea had continued and he had passed a number of black stools. There was occasional vomiting of coffee ground material.

Examination showed a dry skin with generalized exfoliation more marked than on previous occasions.

Fig. 5
Shows excoriated papules, looseness and bulging of the skin over the knees.

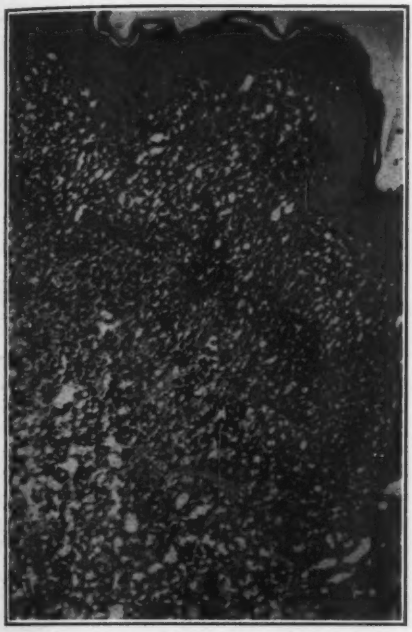

Fig. 6
Reticular cell sarcoma. Section removed from posterior neck. Shows destruction of basal layers and edema of epithelium and proliferation of reticular cells in the cutis.

The remainder of the examination was the same as previously except that a 2x4 cm. mass was palpable in the left lower quadrant of the abdomen. At this time roentgenograms were made of the entire bony skeleton, which were normal. Sternal aspiration biopsy revealed no pathologic cells in the bone marrow.

Histologic examination of the skin showed slight hyperkeratosis of the epithelium. Subepithelially there was a moderate infiltration of lymphocytes, an occasional myeloid eosinophil and scattered mononuclear cells which were monocytoid in character. No definite diagnosis could be made, but it was suggestive of reticulo endothelial neoplasia.

ETIOLOGY

There are many suggestions as to causative factors in the lymphoblastomas, including (1) tuberculosis, (2) lymph drainage from chronic infections (Desjardins), (3) micrococcus infection, (4) torulosis, and (5) neoplasia.

It is felt that they are definite neoplasias because they appear as new growths which show repeated formation of cells which are more or less atypical, fail to reach complete differentiation and retain, if any, only abnormal and perverted functional activity. They do not serve a useful or protective purpose and they are eventually fatal.

In a review of all cases of this type there is a suggestion that there is a toxin or irritative agent which stimulates the entire reticulo-endothelial group of cells to neoplastic proliferation, perhaps a virus, perhaps a chemical heretofore unidentified. The patient with the reticular cell sarcoma presented a consistently high eosinophilia, which points to a beginning that was a non-neoplastic reticulosis.

In a search for the cause of these disorders the additional possibility of an inherent abnormality of the germ plasm must be kept in mind.

The similarity of the lesions in these different neoplasias and the similar involvement of the various parts of the reticulo-endothelial system not only point to the propriety of including all of them under the term "reticulo-endotheliosis," but suggest the possibility of a similar etiology. Physiologically all of these cells, as well as the granulocytes, are concerned primarily with the production of enzymes which can destroy toxic agents, though apparently in the case of the reticular and lymphocytic series this function is limited, as Turley[21] and others have shown, to the inside of the living cell. In these diseases that property seems to be destroyed and proliferation enhanced. With the marked proliferation and immaturity is associated a diminu-

Fig. 7
From another area showing same infiltrate in the cutis.

tion in phagocytic capacity. The resultant crippling of this very large reticulo-endothelial organ then results in the death of the patient.

In the lipoid dyscrasias the phagocytosis gives the same end result without neoplasia, although there are now apparently connecting links between the hyperplasias and neoplasias.

DISCUSSION

We have presented three cases of reticulo-endotheliosis, all of which are different in some phase and which we believe to belong to the neoplastic group. The first case, monocytic leukemia (Schilling), showed a leukemic stage throughout its course, first of the lymphoblastic type with a transition into the monocytic with skin manifestations of purpura and dermatitis followed by vesiculo-bullous eruption and finally exfoliative erythroderma.

The last two cases, one a reticular cell sarcoma and the other Hodgkin's, seem to exhibit skin changes somewhat alike, and not unlike that of monocytic leukemia, but each case had involvement of the nodes and only slight abnormalities of the blood pictures.

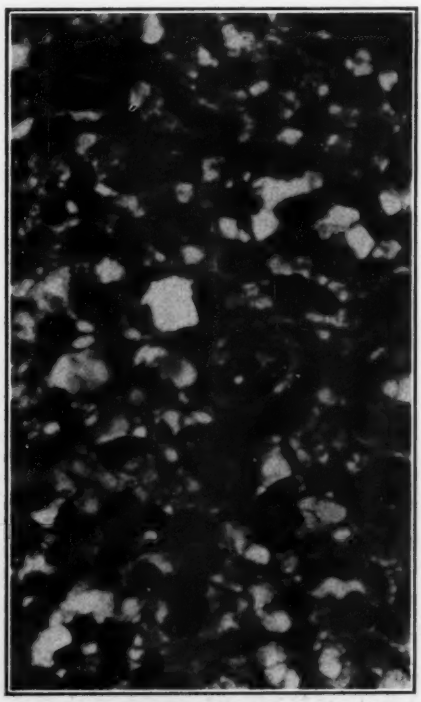

Fig. 8

Shows the reticular cells with very distinct reticulated interconnecting cytoplasm between the nuclei; typical of reticular cell sarcoma.

Classification of the malignant reticulo-endothelioses with the lymphoblastomas, as suggested by Weidman, Lynch and Loveman, is thought to be satisfactory. It is also important to re-emphasize the definite interrelationship between the entire group of lymphoblastomas and to agree with Keim[22] that the term "lymphoblastoma" serves to classify together a group of diseases which have been continually divided and subdivided and in which there has been much question as to their exact relationship. A study of the genetic relationship of the various cells met with in these processes affords a basis upon which their interrelationship can be explained. This revolves around the fact that the lymphoid tissue of the body springs histogenetically from a primitive reticular or stem cell which eventually forms reticulo-endothelial cells on the one hand and the lymphocytes on the other. In the development of the lymph node one line of maturation goes into the formation of the stroma and endothelial phagocytes and the other into the formation of the adult round cells. This system then may give rise to the following malignant tumors, some with a leukemic phase, some without:

(1) Stem cell sarcoma
(2) Reticulum cell sarcoma
(3) Monocytic leukemia (Schilling)
(4) Hodgkin's disease
(5) Hodgkin's sarcoma
(6) Lymphoblastoma
    (a) Lymphoblastic type
    (b) Giant follicular type.

With this classification in view, there is no doubt left that if any changes are to be made in the names and conceptions of the lymphoblastomas they should be made by the hematologists and the pathologists first. The dermatologist should follow their suggestions. The clarification of the classification rests in the more extensive blood studies and more biopsies of the lymph nodes and skin in these cases. In order to correlate the two, biopsy and blood study should be made at the same time. The lack of coordination of the lymphoblastoma group in the past may be due to the fact that many times only one biopsy specimen of tissue has been removed, and that at necropsy. In others, hema-

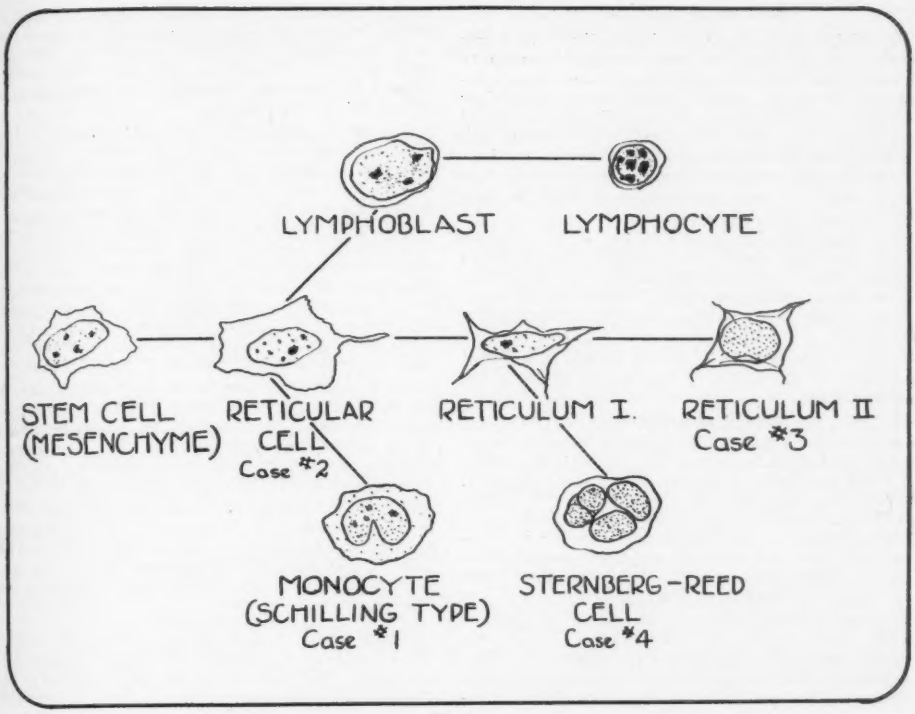

Fig. 9

Suggests the origin of the cells from which the various reticulo-endothelioses arise.

tologic studies have been made after continuous treatment with arsenic and x-rays.

In reviewing all the types of reticulo-endotheliosis, while differing clinically and pathologically, they show many striking features in common. The borderline cases between the hyperplastic benign types and the so-called neoplastic types confirm this observation and give us a new conception of the pathologic phases of this important organ of the body.

CONCLUSION

Three cases of different phases of neoplastic reticulo-endotheliosis have been presented.

Their close genetic interrelationship is stressed.

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DISCUSSION (*Abstract*)

Dr. Adolph B. Loveman, Louisville, Ky.—Drs. Lamb and Stout have rendered a most valuable service to dermatology in unraveling and simplifying such a complex subject as the reticulo-endothelioses. Ever since Aschoff in 1913 separated certain cells of the active mesenchyme into the reticulo-endothelial system, his original conception has been abused by many physicians. Various disorders, ranging from the mildest infections to the most malignant neoplasm, have been grouped under this convenient category.

There certainly can be no criticism of the authors' division into the lipoid and malignant reticulo-endothelioses. This is a convenient, as well as an accurate classification from both a clinical and pathologic point of view. They have, likewise, shown a definite interrelationship.

There are innumerable interesting aspects to many of these cases. I should like to discuss only a few of the more important.

In Case 1, of monocytic leukemia (Schilling), the most interesting feature is that the diagnosis was made from a cutaneous biopsy, in spite of the fact that the peripheral blood was highly suggestive of lymphatic leukemia. Subsequently, however, the blood revealed a picture typical of monocytic leukemia of Schilling. This shows the relationship of the lymphocyte and the reticulo-endothelial cells to a common parent cell and gives to those of us who prefer to group all of these cases under the lymphoblastomata a comforting feeling.

This case further illustrates the value of frequent biopsies with concomitant blood studies. This was suggested and emphasized several years ago when biopsies taken several weeks apart from similar monocytic leukemic nodules revealed a different type of cell in regard to developmental stage.

When cases of monocytic leukemia first appeared in the literature, certain signs and symptoms were emphasized as diagnostic criteria. Forkner, especially, felt that monocytic leukemia was clinically different from the other leukemias in that the former was practically always accompanied by gangrenous stomatitis. Mercer attempted to classify the specific cutaneous lesions into several distinct types. Many of us objected to this, feeling that monocytic leukemia could simulate and be simulated by any of the lymphoblastomata, and that the diagnosis depended upon accurate recognition of cellular type. Subsequent case reports and further studies have substantiated this opinion. A diagnosis can be made only by correlation of the clinical, histologic and hematologic findings. Hence a good pathologist and hematologist are indispensable.

Montgomery originally felt that the Schilling type offered a better prognosis than the Naegeli type. He is no longer of this opinion. Both offer an equally serious prognosis and eventually a fatal outcome.

I agree with the authors in urging cautious and judicious use of the x-ray in therapy. It is our best therapeutic agent at present, but as it is known to stimulate the reticulo-endothelial system, our dosage should be conservative.

In Case 2, monocytic leukemia, aleukemic (Schilling), there are two most interesting aspects. The onset was not in the skin, but in the mucous membrane of the mouth. This was not a toxic manifestation, but rather a specific infiltration. The second interesting feature is that, although the blood was essentially normal, an atypical leukemia was suggested. The biopsy from the ulcer clinched the diagnosis. Thus again the value of cooperation between the hematologist and pathologist is emphasized.

In Case 3, aleukemic reticulosis (reticular cell sarcoma), I should like to call your attention to the fact that various and diverse clinical manifestations may portray a similar histologic picture. In this case the lesions were papular and lichenified. Several years ago at the City Hospital we saw a negro with psoriasiform placques who subsequently developed pemphigoid lesions and finally extensive ulcerative tumors over his entire body. The histologic picture in our case was identical with that of this patient. Our pathologist, however, preferred the diagnosis of lymphoblastoma (reticulo blastoma type) rather than aleukemic reticulosis. I wonder if this would be a convenient method of classification.

The authors have collected 4 cases with diverse clinical signs and symptoms, some showing abnormal cells in the peripheral blood and others exhibiting a normal blood picture, and yet there has been a fundamental similarity in the microscopic histopathology. All showed various degrees of malignant reticulo-endotheliosis.

Following the work of Keim, Warthin and Wile, it took many years for the internists and roentgenologists to become lymphoblastoma-conscious. With the addition of the malignant reticuloses to this fascinating group of diseases, we as dermatologists still have a real task ahead of us.

Dr. Elizabeth M. Ramsey, Washington, D. C.—In the Department of Pathology at George Washington we have been studying within the past two years some cases of Kaposi's disease, which, of course, comes into your province more often than into that of the internist. We have satisfied ourselves, by a series of animal injections and preparation of tumor filtrates which we have reintroduced into cooperative patients, that Kaposi's disease is a true tumor and we have assigned it a place in this very classification which Dr. Lamb has ably outlined here. I think we would even have put it as No. 7 on that excellent list which you showed on the board. As a matter of fact this material is being presented tomorrow in the Section on Pathology, but it occurred to me that possibly your group would be as interested in it as the pathologists themselves.

I should like very much to know if Dr. Lamb agrees with our conclusion that Kaposi's disease, both in its skin manifestation and in its visceral lesions, belongs in this category and probably is a malignant neoplasm of this group rather than an infection.

Dr. Lamb (closing).—In answer to Dr. Ramsey's question in regard to placing Kaposi's sarcoma in this group of reticulo-endothelioses, I would say that I believe it should have been included in a review of the entire group of reticulo-endothelioses, but we felt that it would lead to confusion if it were included in this paper in which we were stressing reticular cell sarcoma and monocytic leukemia of the Schilling type. A word about mycosis fungoides: we feel that it is a reticulo-endotheliosis, and that this term will be applied more and more as a clinical diagnosis, and that a microscopic diagnosis will, in the future, lead to a more specific name, to wit, reticular cell sarcoma or some other suggested type of reticulo-endotheliosis.

THE USE AND ABUSE OF THEOPHYLLINE AND ITS DERIVATIVES*

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and
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The use of theophylline and its derivatives is becoming more general as the application of these drugs to disease states is more clearly understood. Their importance in the therapeutic armamentarium is such that we have felt it advisable to attempt a general review of the literature and to discuss the conditions in which the xanthines may have definite value in the relief of distressing symptoms. For the benefit of those less familiar with their uses, the concluding portion of this presentation will attempt to show the effect of aminophyllin, one of the derivatives of theophylline, on the electrocardiogram.

The available combinations of theophylline are loose chemical mixtures which break down in the stomach to release free purine and the substance that has been used to increase solubility. Those most commonly used are theophylline ethylene diamine or aminophyllin, theophylline with sodium acetate, theophylline with calcium acetate, theophylline monoethanolamine and theophylline with methyl glucamine.

The degree of solubility of these derivatives determines the mode of administration and the rapidity of action, while the clinical effectiveness of the combinations depends to a great extent upon the amount of theophylline present. Theophylline itself is insoluble. Theophylline sodium acetate, containing 60 per cent of theophylline, is soluble one part in twenty parts of water and theophylline ethylene diamine, containing 78 to 83 per cent of theophylline, will dissolve in water to 40 per cent. It is the greater solubility of the last named derivative that increases the extent of its clinical use and renders it suitable for multiple modes of administration.

Theophylline and all of its derivatives may be administered orally in capsules or tablets. Theophylline ethylene diamine may be administered by rectum in a suppository and also by the intramuscular or intravenous routes. The dosage of the drugs varies slightly, but all should be given in sufficient quantity to produce physiologic effects. Gastric irritation frequently occurs in patients unduly sensitive to the drugs, or in those in whom larger doses have been used. The gastric symptoms most commonly expressed are distention, nausea and vomiting, and a burning epigastric or substernal pain. They may be avoided by frequently changing the derivative used or by using the drugs intensively for short periods of time, discontinuing with the onset of gastric irritability and resuming after a brief interval of rest.

These drugs in larger doses or in sensitive individuals often produce other symptoms disturbing to the patients. The most important among these, according to Gilbert and Kerr,[1] are a throbbing type of headache, a sensation of fulness in the head, vertigo or lightheadedness, nervousness of a subjective type and cardiac palpitation with precordial pain or a sensation of oppression. The rapid intravenous administration of aminophyllin may be followed by the above symptoms in an exaggerated and distressing form. Mild syncopal attacks may appear in some sensitive patients or in those who are highly neurotic. These symptoms may be avoided by slow administration of the drug extending over a period of three to five minutes.

Theophylline and its derivatives may be used as: (1) diuretics, in the relief of the edema of congestive heart failure; (2) respiratory stimulants, in the abnormalities of respiration associated with congestive heart failure and in bronchial asthma; (3) vasodilators, in coronary artery disease associated with arteriosclerotic and hypertensive heart disease; and (4) myocardial stimulants, through their action on the coronary arteries with the resultant improvement of coronary circulation and myocardial nutrition.

EFFECT AS DIURETICS

The diuretic action of these drugs in cardiac edema, according to Deschamps,[2] is due to direct cellular action on the kidneys, vasodilatation of the renal vessels and the stimulation of flow of water and chlorides from the tissues to the blood stream, thus facilitating the excretion of urine. Theophylline is more effective in this action than its derivatives, but due to its tendency to produce gastric irritation and an increase in nervous irritability, it cannot be continued over a long period of time nor can it be given in doses large enough to be effective in all cases.

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Aminophyllin, when taken by mouth, is less effective than theophylline as a diuretic in cardiac edema, but when given by the intravenous route in doses of 0.24 to 0.48 gram, it may be equally effective. When theophylline or its derivatives is combined with a mercurial diuretic, or when given simultaneously with the mercurial, the diuretic effect of the mercurial is markedly enhanced. Hermann[3] has demonstrated that the dose of the mercurial can be reduced when the drug is given simultaneously with aminophyllin. "Mercupurin," "salyrgan"-theophyllin or aminophyllin 0.24 to 0.48 gram, with 1 to 2 c. c. of "salyrgan," may be given two to three times a week at intervals of a few days or a few weeks, depending upon the degree of edema, the toxic reaction of the drug or the rapidity of formation of the fluid in the tissues. DeGraff *et al.*[4] have shown that the mercurial combined with theophylline is more rapidly absorbed from the site of intramuscular deposition than the mercurial alone, thus reducing the danger of intoxication from retention of the metal in the tissues.

The combination of a mercurial and theophylline is more effective than the mercurial or theophylline alone in the removal of ascitic fluid in cases of portal obstruction. Schmitz[5] says that the xanthines when used alone are of little value in these cases.

The diuretic effect of hypertonic glucose solutions when used in congestive heart failure may be enhanced by the addition of aminophyllin to the solution. Preliminary digitalization in congestive heart failure seems to be more conducive to an increased diuresis when theophylline and its derivatives are employed. In acute heart failure, digitalis and a theophylline preparation may be given concurrently. Aminophyllin administered intravenously twice daily in doses of 0.24 to 0.48 gram in 20 to 30 c. c. of distilled water, normal saline or hypertonic solution of glucose is the most effective of the theophylline derivatives in this emergency.

EFFECT ON ABNORMALITIES OF RESPIRATION

The abnormalities of respiration associated with congestive heart failure, arising in the course of heart disease of various types, may vary from the simple dyspnea of exertion, with or without evident edema, to the more complex and more disturbing states, such as paroxysmal nocturnal dyspnea and Cheyne-Stokes respiration. The clinical expressions of these abnormalities may assume various forms.

Simple dyspnea of early and mild congestive failure may appear only after moderately severe exertion. As the cardiac failure progresses, dyspnea is induced by a diminishing amount of exertion until the patient is unable to exert himself in the slightest degree without production of this distressing symptom.

Paroxysmal nocturnal dyspnea or cardiac asthma may be a distressing symptom of an acute left ventricular failure. The ventricular failure may occur in sleep with sudden elevation of blood pressure, the result of an increased heart rate following exciting dreams, a distended urinary bladder or other sensory stimuli. The patient is often awakened from a sound sleep by the respiratory difficulty. The breathing is labored, gasping or wheezing and intense fright often occupies a prominent place in the syndrome. Cough and expectoration of a thin, at times blood-tinged sputum, the result of an accompanying pulmonary edema, are most commonly present. Precordial pain with tachycardia is usually present. The attack may subside as quickly as it develops, but the patient dreading its return frequently remains in a state of fearful expectancy.

Cheyne-Stokes respiration, or the periodic breathing of heart disease, is commonly associated with cardiac failure of hypertensive and arteriosclerotic origin. It may occur also in intracranial lesions, uremia and drug poisoning. The occurrence of this abnormality in heart failure is an indication of failure of the left ventricle. The attacks of periodic breathing may continue throughout the day and night or they may be paroxysmal for short or long intervals with a sudden onset and a sudden cessation. The nocturnal attacks are particularly disturbing, often awakening the patient either during the period of apnea or during the period of hypernea.

The mechanism of the respiratory abnormalities in cardiac failure is not entirely clear. Many authors[6 7 8 9] are of the opinion that the increased cerebral venous pressure diminishes the intracranial blood flow, thus favoring anoxemia of the respiratory center. Other authors[10] contend that orthopnea is due to the change in vital capacity and lung volume.

The preponderance of evidence seems to favor the views of the former group. Orthopnea may be relieved by flexion of the head when the patient is in the recumbent posture or by assuming the sitting posture. The relief obtained is due to a decrease in the cerebral venous pressure. Spinal drainage, by lowering venous pressure,

may produce temporary relief of dyspneic symptoms. A restoration of cardiac integrity with the consequent improvement in circulation is likewise followed by freedom from dyspnea.

Studies[8 9] on the relationship of increased intrathecal and venous pressures to the occurrence of dyspnea and Cheyne-Stokes respiration have shown a rather constant increase of these pressures in the above clinical conditions. The reduction of intrathecal and venous pressures with aminophyllin administered intravenously was followed by relief from the dyspnea and by restoration of the Cheyne-Stokes respiration to a normal rhythm. It is assumed that the relief secured is an indication of an improved cerebral circulation.

The intravenous use of aminophyllin in Cheyne-Stokes respiration was initiated largely through the work of Vogl.[11] In 1932, reporting on five years' observation of the drug, he said that it never fails to restore Cheyne-Stokes respiration to a normal type of breathing. Other authors[8 9 12 13] have had similar though perhaps less consistent results. Marais and McMichael[12] are of the opinion that the drug acts specifically on the respiratory center and that its effect is due to the ethylene diamine fraction of the compound.

Theophylline and its derivative compounds may play an important role in the control of the respiratory abnormalities associated with cardiac failure in arteriosclerotic and hypertensive heart disease. In simple dyspnea they may be administered orally over a long period of time. In paroxysmal nocturnal dyspnea, aminophyllin administered intravenously in doses of 0.24 to 0.48 gram at bedtime may relieve the patient of the distressing symptoms. It may obviate the necessity for the use of morphia. When the attacks persist the drug may be given intravenously in the above doses twice a day until the attacks cease. The effect may be intensified by the compounds of theophylline. Oral administration may be continued for an indefinite period of time

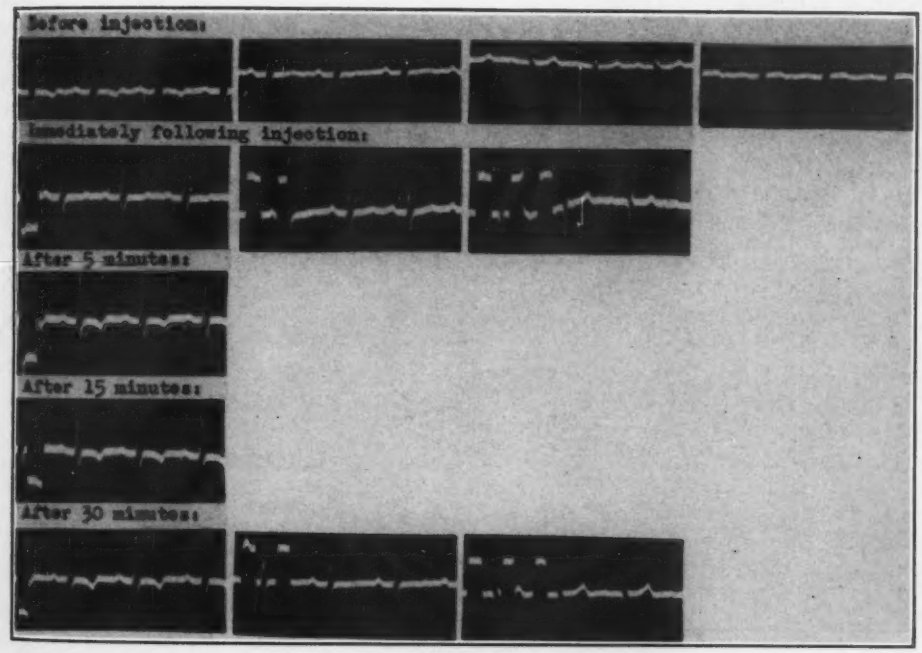

Fig. 1, Case 2

A. P., a white woman, aged 63, was known to have hypertensive heart disease. She was admitted to the hospital May 9, 1939, with numbness of the entire right side of the body. She had been troubled with dyspnea on moderate exertion for four years. Her blood pressure at the time of admission was 260/120. There was some motor weakness on the right side. Serum test, basal metabolic rate, urinalysis, nonprotein nitrogen and blood picture were normal. The electrocardiogram showed left axis deviation and inverted T waves in leads I and IV. Following intravenous aminophyllin, the T waves in lead I immediately become upright; after 5 minutes they again show inversion and remain even more markedly inverted through 30 minutes. The axis shift becomes more pronounced.

after there is no longer a demand for the intensive use of the drug.

The same procedure may be followed in the use of aminophyllin for the control of Cheyne-Stokes respiration. Where uncertainty exists as to the nature of the nocturnal respiratory abnormality, a test dose of five to seven grains of aminophyllin may be given rectally in a suppository. If relief from the attack is obtained by this method, the indication for the use of the drug may be established. It may then be continued by any of the routes of administration recommended above, the frequency, size of dosage and mode of administration to be determined by the frequency and severity of the attacks. Full doses of the drug administered intravenously should be given slowly over a period of three to five minutes to avoid excessive stimulation during the hyperneic interval.

A procedure employed by some authors[12] in the administration of this drug in Cheyne-Stokes respiration, consists in dissolving 0.48 gram of the drug in 2 c. c. of distilled water. This total dose is administered in four consecutive doses of 0.5 c. c. each. The fractional amount is injected at the time of the decrease of the respiratory movement. These same authors also suggest its oral use in 0.5 gram doses given during the attack.

EFFECT ON THE CORONARY ARTERIES, ANGINAL PAIN AND CORONARY THROMBOSIS

Interest in the purine base derivatives as vasodilators may be traced to the cardiac perfusion experiments of Hedbom[14] in 1899. This author demonstrated an increased coronary flow following the addition of theobromin to the perfusate. Heathcote,[15] in 1920, confirmed Hedbom's work. Guggenheimer and Sassa,[16] in 1923, reported an increase in the perfusion rate following the use of caffeine, theophylline and theophylline ethylene diamine. Theophylline eth-

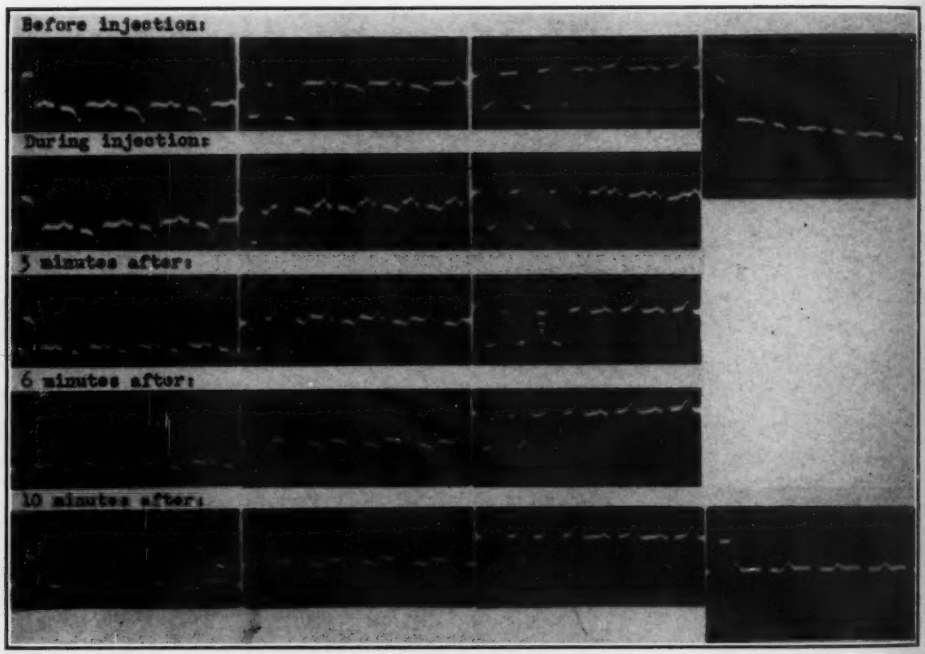

Fig. 2, Case 7

H. H., a white woman, aged 40, a known hypertensive of at least two years' duration, was admitted to the hospital on September 21, 1939, with a history of headache and severe vertigo, drowsiness and numbness on the right side and difficulty with speech, all of two days' duration. There had been a similar episode one year before. Her blood pressure at the time of admission was 240/144. There were neurological signs of a left cerebral hemorrhage. Serum test, urinalysis, blood sugar and nonprotein nitrogen were normal. The red count was 3,900,000, and hemoglobin 67 per cent. The electrocardiogram shows marked inversion of the T waves in leads I, II and IV and left axis deviation. Three minutes following administration of aminophyllin the inversion of the T wave in lead I becomes less pronounced and tends toward a diphasic character. This also occurs in lead II. The apex lead shows the most marked alteration, becoming completely upright after ten minutes.

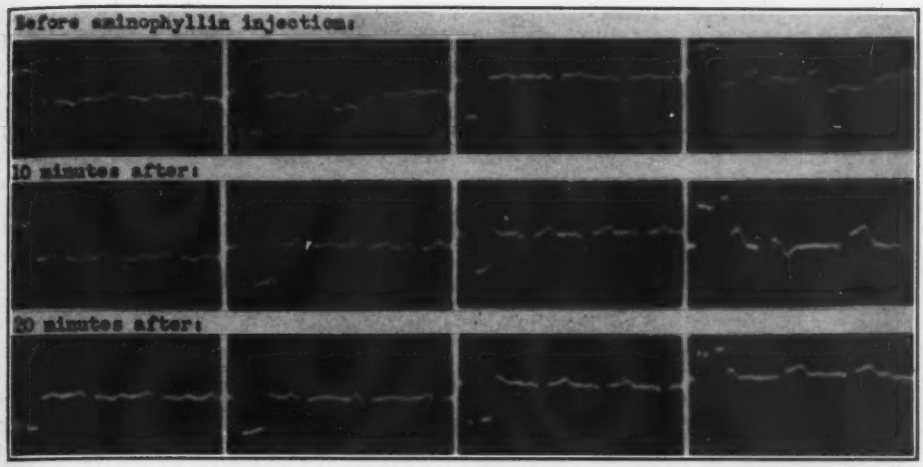

Fig. 3, Case 23

J. O., a white woman, aged 64, had a diagnosis of: (1) hypertensive heart disease; (2) chronic gallbladder disease; and (3) diabetes mellitus. Her cardiac history was chiefly that of dyspnea on moderate exertion with occasional precordial pain. The blood pressure was 190/120. The diabetic condition appeared two years previously with sugar in urine and fasting blood sugar of 210 mg. per cent. The gallbladder was not visualized with intravenous cholecystography. The electrocardiogram shows inverted T waves in lead I, diphasic T waves in leads II and IV with a high take-off in the latter. Ten minutes after aminophyllin, the T waves are diphasic in lead I, upright in lead II and altogether upright in lead IV with an increase in the height of the ST segment. There is a ventricular extrasystole in the apex lead. Twenty minutes after the injection there has been a reversal to the original state in lead I. Lead II shows almost iso-electric T waves and in the apex lead the T waves are still upright with an ST segment that approaches the iso-electric level.

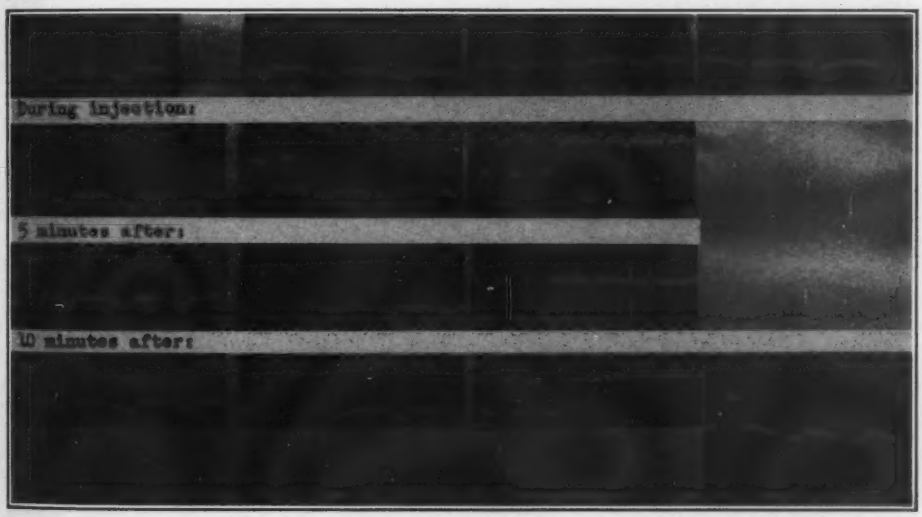

Fig. 4, Case 17

W. H., a white man, aged 58, was diagnosed as having arteriosclerotic heart disease. He complained of substernal pain and some dyspnea on exertion. He also had occasional palpitation and epigastric discomfort. The symptoms dated back eight months. The heart was not enlarged. The rate was 80, rhythm regular, no murmurs. Blood pressure was 150/100. The electrocardiogram shows depressed ST segments in leads I and II and sharply inverted T waves in these leads. In the third lead, the ST segments are slightly elevated and the T waves are inverted. T waves in the apex lead are upright to diphasic. After the aminophyllin the QRS complexes in lead III change from upright to diphasic curves. T waves become almost iso-electric within five minutes and continue as much through ten minutes. In the apex lead the ST segments are depressed and the T waves more prominent after ten minutes.

ylene diamine produced an increase in the coronary flow of 80 per cent. Smith, *et al.*,[17] in rabbit heart experiments reported an increase in the rate of flow of 30 to 40 per cent after theophylline and 60 to 80 per cent after theophylline ethylene diamine.

The clinical use and value of theophylline and its derivatives in the anginal syndrome was brought to the attention of the profession by Musser,[18] who reported in 1928 that the pain of the anginal syndrome was relieved by the oral administration of theophylline ethylene diamine. Subsequent investigators[1, 19] reported similar results when other preparations of theophylline were used.

Brown and Riseman[20] measured the effect of orally administered preparations of theophylline on exercise tolerance and the production of anginal pain in cases of coronary arteriosclerosis. The efficiency of the myocardium was improved by the following drugs, with decreasing effectiveness in the order named, theophylline sodium acetate, theophylline calcium salicylate and theophylline ethylene diamine.

Starr, Gamble, *et al.*,[21] using caffeine and theophylline orally in anginal patients, report an increase in cardiac output and work with an absence of cardiac pain following the increase in work. Subsequently Riseman and Brown[22] and Levy *et al.*[23] reported a similar improvement in myocardial efficiency, as measured by the exercise tolerance test and the relief of anginal pain, after the intravenous administration of theophylline ethylene diamine. The latter authors found that the oral administration of theophylline ethylene diamine produced positive but less striking results.

The value of theophylline and its derivatives in the treatment of the anginal syndrome occurring in heart disease of arteriosclerotic, hypertensive, luetic and rheumatic origins, seems to be well established by the clinical evidence pre-

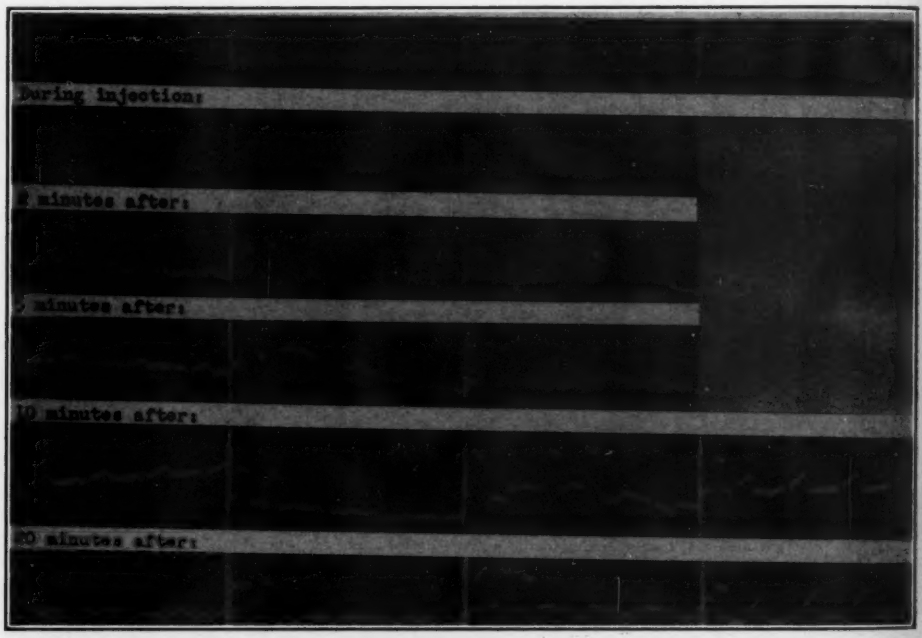

Fig. 5, Case 11

E. B., a white woman, aged 55, had the diagnosis of coronary occlusion. There was a history of recurrent episodes of precordial pain, dyspnea and palpitation with exertion for four years. She visited the outpatient department because of precordial pain which had persisted for one week. Her heart was not enlarged to percussion. The rate was 90, rhythm regular, there were no murmurs, and blood pressure was 150/80. The electrocardiogram showed a "coronary type" of T wave with slightly elevated take-off in lead I and depressed ST segments in lead III. The apex lead shows a markedly elevated ST segment and an inverted T wave. After the administration of aminophyllin, the T waves show an increase in amplitude in lead I, a decrease in amplitude in lead II, becoming almost iso-electric in ten minutes, and an increase in amplitude in lead III, lasting for five minutes. After ten minutes they become inverted in lead III and remain so after twenty minutes. In the apex lead, T waves become upright in ten minutes and have a very high amplitude with a high take-off in twenty minutes.

sented above, although several authors, notably Gold *et al.*,[24] Evans and Hoyle,[25] and Master,[26] have reported entirely negative results following the use of these drugs. Anginal pain is relieved or modified by the oral administration of the above drugs in a large percentage of cases. The relief of pain seems to occur with the improvement in coronary circulation which is manifested by an increase in myocardial efficiency as measured by exercise tolerance tests.

It is important to stress the point that to obtain a therapeutic result these drugs, when administered by mouth, should be given in full doses to tolerance. Alternation of the preparations may be employed to avoid the development of tolerance. If the drugs must be administered over a long period of time, it is of value to discontinue them for short intervals in order to prevent the distressing gastric symptoms following prolonged use. Their effectiveness seems to be enhanced by this procedure. Theophylline ethylene diamine is not so effective as some other theophylline preparations when given orally and hence it may be used intravenously in doses adequate to the severity of the anginal syndrome. The simultaneous oral and intravenous administration of this drug may prove satisfactory in relieving anginal pain.

The effectiveness of the above drugs in altering the course and influencing the ultimate result of coronary thrombosis has been questioned in spite of the clinical evidence adduced in proof of their value in relieving the pain of the anginal syndrome.

The experimental work of Fowler *et al.*,[27] who used aminophyllin intravenously in dogs following artificial occlusion of a coronary artery, showed that a definite change in color of the infarct followed within two minutes after injection of the drug, indicating an improvement of the collateral circulation of the area of the infarct. The work further showed that the rate of healing of the infarct was increased by use

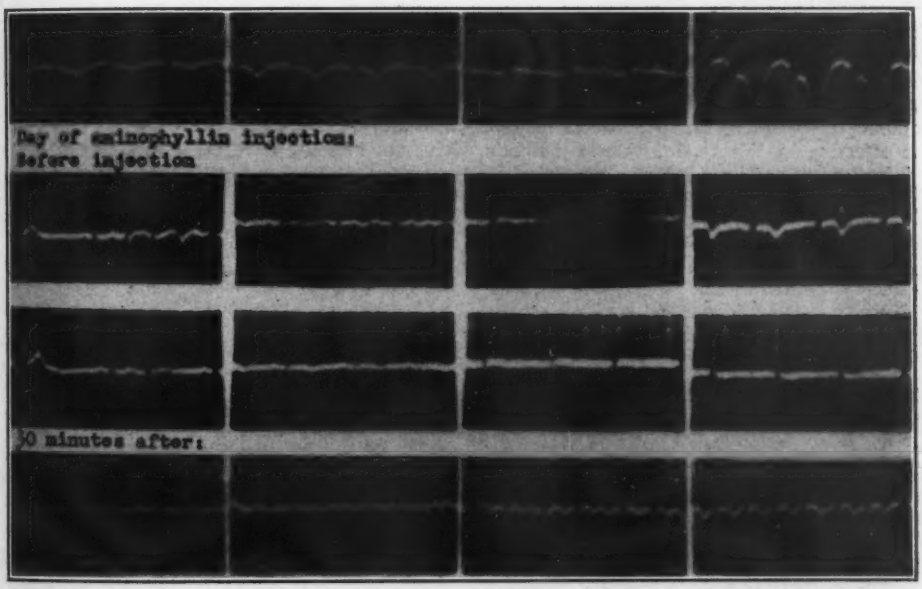

Fig. 6, Case 24

L. M., a white man, aged 66, had a diagnosis of coronary occlusion. He was admitted to the hospital September 12, 1939, with a history of severe precordial pain, radiating down the left arm, persisting for twenty-four hours. He complained of a constricting sensation about the chest, marked dyspnea and palpitation. The heart was found to be enlarged to the left, rate 110, rhythm regular. His blood pressure was 140/95. Serum test and urinalysis were negative. There was leukocytosis with shift to the left in the Schilling differential. The electrocardiogram at the time of admission showed "coronary T waves." The T waves are markedly inverted with a low take-off in the apex lead. The following day, the tracing obtained just before the aminophyllin injection shows runs of auricular fibrillation. T waves are upright in leads I and II; the ST segment in lead IV is iso-electric. Fifteen minutes following the administration of the drug the rhythm is regular except for occasional ventricular extrasystoles. The apex lead shows a slightly depressed ST segment followed by an upright T wave of low voltage. Thirty minutes after the injection fibrillation again obtains and the T waves in the apex lead are once more inverted. The ST segments in this lead are iso-electric as before.

of the drug and that the healed infarcts were smaller than those in the control animals.

Wiggers and Greene,[28] using the prevention of the contractile failure of the heart muscle following ligation and the restoration of muscle contraction in the ischemic areas as evidences of effectiveness of a drug in producing dilatation of the collateral coronary circulation, conclude that theophylline and its derivatives are without effect. Their conclusions regarding theophylline ethylene diamine when used intravenously are unsatisfactory. Gold *et al.*,[29] using aminophyllin intramuscularly following artificial occlusion of the coronary arteries in cats, say that the drug does not influence the course of the infarct in any way. Smith *et al.*,[30] however, contrary to the evidence presented by the two last named authors, report favorable results with aminophyllin intravenously in clinical cases of coronary arteriosclerosis associated with congestive heart failure, paroxysmal dyspnea, angina of effect and coronary occlusion. They suggest that the results obtained are due to an improvement of the collateral coronary circulation.

Our own experience with the use of aminophyllin intravenously in acute coronary thrombosis has been satisfactory in many cases. It may be of distinct benefit in the relief of pain accompanying the attack and at times may be more effective in this regard than a narcotic. Its value as an analgesic may be enhanced by the simultaneous intravenous administration of hypertonic solutions of glucose. It should be given at the time of the attack in a dose of 0.48 gram and continued intravenously twice daily in the same dose until the acute symptoms subside. After the subsidence of the acute symptoms, it may be given intravenously once daily for one to two weeks or it may be given orally in daily doses of nine to fifteen grains over a prolonged period of time.

THE EFFECT OF AMINOPHYLLIN ON THE ELECTROCARDIOGRAM

The conflict of opinion existing in the literature as to the effect of theophylline and its derivatives on the coronary flow in angina pectoris and coronary thrombosis led us to the belief that some light might be shed on the question by the study of the effect of aminophyllin, administered intravenously, on the electrocardiogram in known cases of heart disease. The literature is devoid of extensive experimental work on this subject in the human being. Gold *et al.*[29] studied the effect of intramuscular injection of theophylline with ethylene diamine on the electrocardiograms of cats on whom experimental coronary occlusion had been performed. Their results were essentially negative.

Starr, Gamble *et al.*[21] reported no noteworthy changes in the electrocardiogram in the human after the oral use of both caffeine and theophyl-

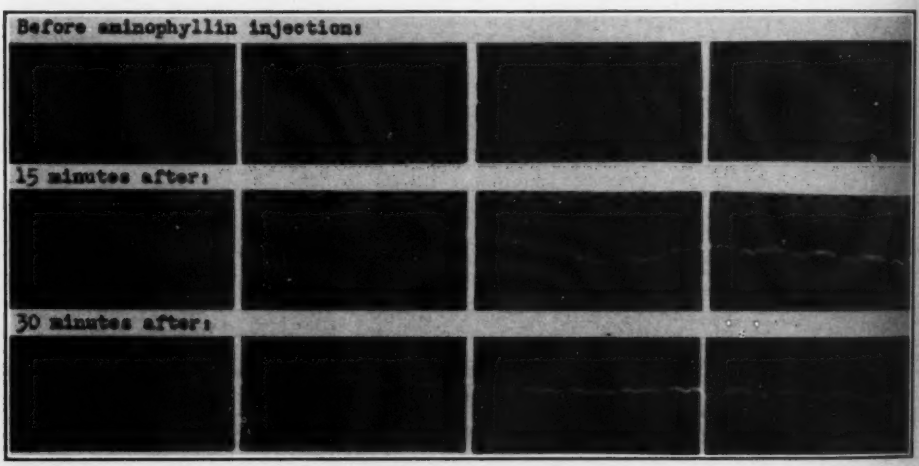

Fig. 7

This is the electrocardiogram of Case 24 taken on November 6, 1939, about two months after his attack. The rhythm is regular. Before the aminophyllin was given the T waves are iso-electric in all standard leads, and deeply inverted in the chest lead. A fairly well-defined T wave is evident in lead I fifteen to thirty minutes after injection. The most marked alteration occurs in lead IV, where the amplitude of the inverted T wave is definitely less and the ST segment becomes elevated toward the iso-electric level.

line. Gold *et al.*[24] reported no changes in the electrocardiogram after oral and intramuscular injection of aminophyllin in the human. Harvill[31] reports an electrocardiographic study on four patients after the use of aminophyllin. His results were inconclusive.

Falk[32] administered aminophyllin intravenously in clinical cases of coronary thrombosis to determine the effect of the drug on the symptomatology of this condition and on the electrocardiogram. He concluded that the clinical effects were favorable and that the altered complexes of the electrocardiograms were restored to a more normal appearance. It is his opinion that these restorations towards normal are indices of an improved circulation in the myocardium. Levy,[23] using aminophyllin intravenously, reported a lessening of the electrocardiographic changes in his cases of angina pectoris with an induced anoxemia.

PROCEDURE

The routine that was followed in investigating the effects of aminophyllin on the electrocardiogram was simple. The patients were placed in the supine position and the three standard leads obtained. For recording the chest lead the apex beat was located and the left leg electrode placed just within this point, the left arm electrode being shifted to the left leg. With this technic the QRS complexes are normally directed as a positive deflection and the T waves are likewise upright. After recording the four leads, 0.48 gram aminophyllin was administered by vein as rapidly as the comfort of the patient would allow. In somewhat more than half the cases in which the 0.48 gram dosage was used, there resulted symptoms of breathlessness, flushing, anxiety, nervousness, faintness and palpitation. In two instances these effects reached rather alarming proportions, the patients actually lost consciousness, perspired profusely and, subsequently, vomited. Both of these were emotionally unstable women who had previously been labeled "neurotic." Indeed, there seemed to be a direct relationship between the emotional fac-

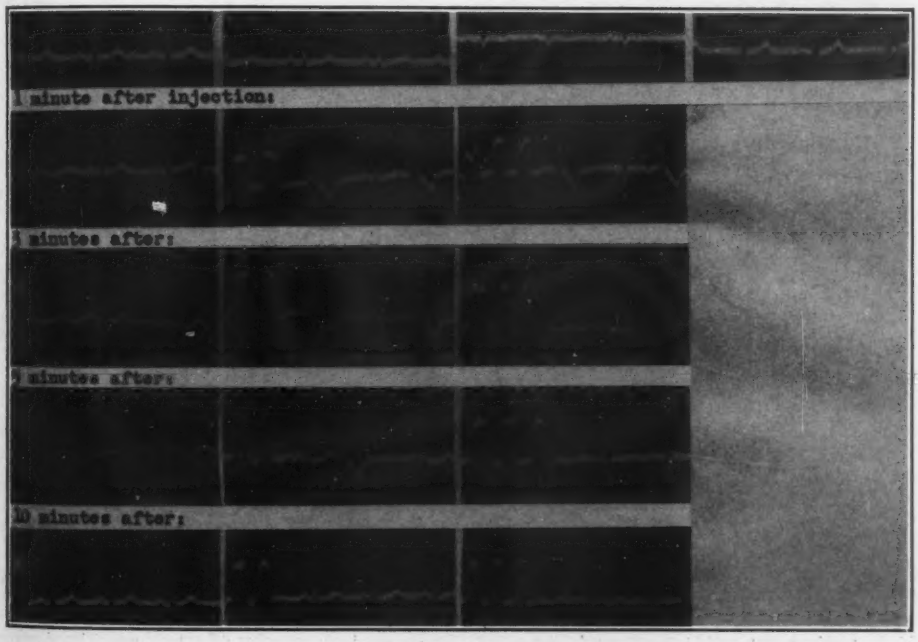

Fig. 8, Case 12

G. H., a colored man, aged 48, was diagnosed as having the anginal syndrome. When seen in the outpatient department he complained of precordial pain and dyspnea on exertion. Pain radiated to the left shoulder. Examination of the heart and lungs was negative. There were no signs of general arteriosclerosis. Blood pressure was 100/80. The electrocardiogram showed a left axis deviation and occasional ventricular extrasystoles. Within one minute following the administration of the aminophyllin coupled rhythm appears, persisting for three minutes. This may be an indication of ventricular irritability.

tor and the intensity of the reactions. There were no permanent ill effects.

Tracings were recorded for all the standard leads at some time during the injection, immediately following, and at intervals of approximately three minutes, five minutes, ten minutes and twenty minutes. In most instances the apex lead was recorded after a lapse of ten and again after twenty minutes following the administration of the aminophyllin.

In no case was the patient told that the procedure was carried out for therapeutic reasons. Despite this, three patients who suffered with regular bouts of nocturnal dyspnea, reported the following morning that they had slept the night through without distress.

In this series, a total of 38 patients was subjected to the procedure. Of the total number of records obtained, 26 showed some easily detectable alteration some time within the twenty minutes following the injection (*Chart 1*). Eleven tracings showed no perceptible change. A more detailed survey of the individual changes observed will be discussed below. The electrocardiograms were altered in eight cases of hypertensive heart disease, five cases of arteriosclerotic heart disease, two cases of rheumatic heart disease, four cases of coronary occlusion, two cases with anginal syndrome, one case of coronary artery disease, one case of pernicious anemia, one case of hypothyroidism, one case of bleeding peptic ulcer, and one case with cardiac neurosis (*Chart 2*).

The cases showing no alteration of the electrocardiogram included one coronary thrombosis, one angina, three hypertensive heart disease, two arteriosclerotic heart disease, two rheumatic heart disease, one luetic heart disease, one colloid goiter and one infarct of the lung.

A few of those electrocardiograms showing the

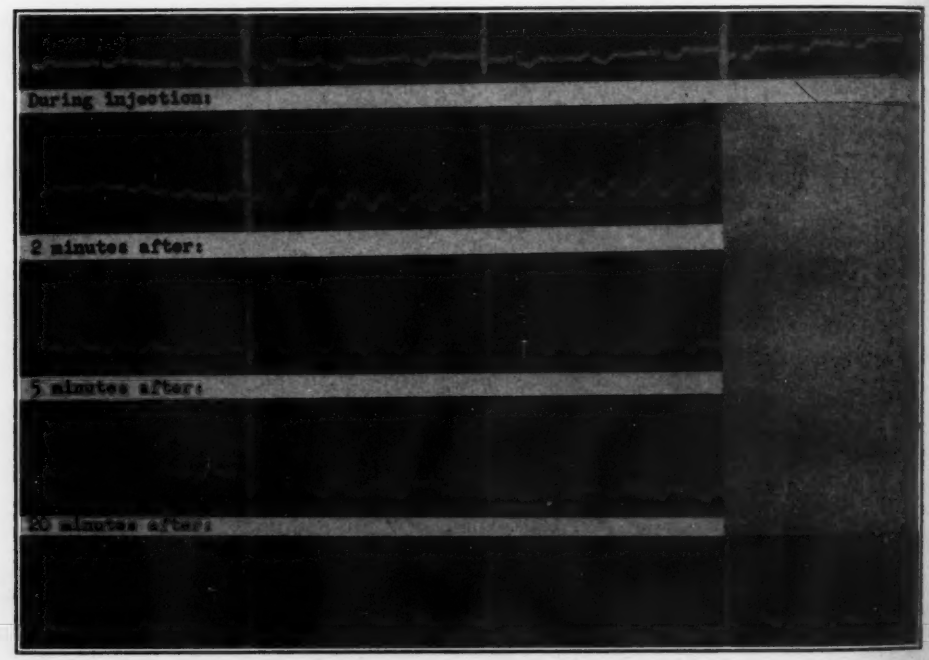

Fig. 9, Case 19

W. K., a white woman, aged 31, had rheumatic heart disease. She was seen in the outpatient department complaining of pains around the heart, palpitation and dyspnea on exertion. In childhood she had attacks of rheumatism and frequent vomiting spells. The heart was not enlarged. The rhythm was regular, rate 80 per minute. There was an apical systolic murmur. Blood pressure was 118/70. The lungs were clear; there was no peripheral edema. The electrocardiogram shows diphasic T waves in leads I, II and IV. After aminophyllin the T waves become upright during the injection in lead I and increase in amplitude up to 5 minutes. The rate increases and the summation of the T waves and the P waves in lead II accounts for most of the altered configuration. This applies also to lead III. However, in lead IV the diphasic T waves become altogether upright with a low take-off twenty minutes after the injection.

most pronounced changes are presented below, together with some of the salient facts of the patients' histories and physical findings. All tracings reproduced here are arranged to read from lead I on the left through lead IV on the right side of the figure.

Chart 1

TRACINGS CHANGED AFTER AMINOPHYLLIN INJECTION

Hypertensive Heart Disease, 8 Cases

Case 1—E. D., white, female ..... age 35
Case 2—A. P., white, female ..... age 63
Case 3—E. G. white, female ..... age 84
Case 5—M. F., colored, female ..... age 50
Case 6—J. T., colored female ..... age 49
Case 7—H. H., white, female ..... age 40
Case 8—J. L., colored, female ..... age 40
Case 23—J. O., white, female ..... age 64

Hypothyroidism, 1 Case

Case 15—M. H., white, female ..... age 30

Arteriosclerotic Heart Disease, 5 Cases

Case 4—S. L., colored, female ..... age 50
Case 16—F. G., white, female ..... age 62
Case 17—W. H., white, male ..... age 58
Case 22—L. V., white, male ..... age 49
Case 25—M. R., white, female ..... age 79

Cardiac Neurosis, 1 Case

Case 9—I. A., white, female ..... age 41

Peptic Ulcer, 1 Case

Case 18—A. L., white, male ..... age 59

Coronary Occlusion, 4 Cases

Case 10—T. F., white, male ..... age 46
Case 11—E. B., white, female ..... age 55
Case 24—L. M., white, male ..... age 66
Case 26—J. M., white, male ..... age 54

Rheumatic Heart Disease, 2 Cases

Case 19—W. K., white, female ..... age 31
Case 20—M. L., white, female ..... age 45

Anginal Syndrome, 2 Cases

Case 12—G. H., colored, male ..... age 48
Case 13—E. S., white, female ..... age 39

Coronary Artery Disease, 1 Case

Case 21—E. S., white, male ..... age 63

Pernicious Anemia, 1 Case

Case 14—E. G., white, female ..... age 43

TRACINGS NOT CHANGED AFTER AMINOPHYLLIN INJECTION

Hypertensive heart disease	3 cases
Arteriosclerotic heart disease	2 cases
Rheumatic heart disease	2 cases
Luetic heart disease	1 case
Angina pectoris	1 case
Coronary thrombosis	1 case
Infarct of lung	1 case
Hypertrophic arthritis	1 case
Total	12 cases

DISCUSSION

As can be easily seen from the foregoing, any attempt to correlate the individual electrocardiographic changes or to classify them in relation to some specific factor is indeed hopeless. There is no persistent alteration nor even any suggestion of predictable response. In grouping the cases as to diagnosis, severity of the heart damage, age, sex, blood pressure or any other single feature, there results no constant change that may be of significance.

There can be no doubt, however, that changes often do occur in the electrocardiogram when aminophyllin is injected intravenously. This fact, questionable as it has been to date, now seems to us well established. We can conclude little beyond this fact. Nevertheless, we may indulge in speculation concerning these changes and would suggest the following explanations for the changes.

Chart 2

Twenty-six tracings showed change following the aminophyllin.
Twelve tracings showed no change.
Of the 26 tracings that were affected (94 leads):
Lead I was altered in 8 instances
Lead II was altered in 15 instances
Lead III was altered in 19 instances
Lead IV was altered in 15 instances.
In the 104 individual leads comprising these 26 tracings, there was no apparent regularity in the changes.
T waves were altered in 50 of the leads.
QRS complexes were altered in 7 of the leads.
ST segments were altered in 2 of the leads.
A-V conduction time was decreased in 1 case during the injection.
Ventricular tachycardia followed within 5 minutes in 1 instance.
Sex, 18 females, 8 males.
Average age, 52 years.

Age range:

30 to 39 years, 4 cases
40 to 49 years, 9 cases
50 to 59 years, 6 cases
60 to 66 years, 5 cases
79 years of age, 1 case
84 years of age, 1 case

Tracings in Which Changes Occurred, Classified According to Diagnosis

	No. Cases	No. Cases Showing Changes	Per Cent Showing Changes
Coronary occlusion	5	4	80
Hypertensive heart disease	11	8	72
Arteriosclerotic heart disease	7	5	71
Angina pectoris	3	2	66
Rheumatic heart disease	4	2	50

Concerning the cardiac rate, it may be noted that in most instances there resulted an acceleration of the heart beat. It has been demonstrated repeatedly that aminophyllin, being one of the group of vasodilators, often causes a fall of blood pressure coincident with the vascular dilatation, hence a commensurate increase of pulse rate is expected. It was noted above that we observed a definite correlation between the emotional state of the patient and his subjective response to the drug. This fact would seem to indicate that when tachycardia appeared it was, for the most part, of extra-cardiac origin and had little if any direct relation to the alterations of the pace-maker or the intrinsic conduction mechanism of the heart.

In this study we are primarily interested in the possible changes in coronary circulation following the use of aminophyllin, as may be evidenced by electrocardiographic signs indicating a temporary restitution of myocardial integrity as a result of the improved coronary circulation. Thus, the rate or even the rhythm of the heart action is not of prime importance to our investigation, but an alteration of the electrical conductivity of the myocardium may be of value.

The electrocardiogram is but a pictorial record of the electrical changes in the heart muscle during systole and diastole and represents the fluctuation in electrical potential during each cardiac cycle. From the contracting healthy myocardium, a certain complex configuration is recorded with the electrocardiograph. If anything happens to disturb the electrical conductivity or electrical continuity of the heart muscle changes result in the tracing obtained.

It is assumed, therefore, that the changes recorded above are the results of variations in the myocardial conductivity. These changes are transient and occur very rapidly after the drug is administered. Since aminophyllin causes vascular dilatation elsewhere in the body, and since the stated character of the electrocardiographic response may be assumed to be due to alterations in blood flow, it may be further assumed that changes in the coronary circulation are responsible for alterations occurring in the electrocardiograms subsequent to the injection of aminophyllin.

If this reasoning is sound, then it might further be assumed that those cardiac cases in which the electrocardiograms remained unchanged following the administration of the drug were cases with myocardial damage too advanced to be altered, with coronary arteries too sclerotic to be dilated, or with a collateral circulation inadequate to affect the nutritional state of the muscle.

It is hoped that further investigation will be stimulated by these assumptions, since they suggest many possibilities. A larger series of cases with a positive response to the drug might indicate a prognostic value in the use of aminophyllin. Changes in the above tracings might then be sufficient evidence of a coronary circulation capable of alterations and therefore amenable to therapy.

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DISCUSSION (*Abstract*)

Dr. George R. Herrmann, Galveston, Tex.—To those clinicians who have been more or less with backs to the wall on the subject of aminophyllin because of the work of Gold and others criticizing our methods of estimating value, this paper by experienced, active, critical clinicians is quite heartening, to say the least. I believe that most of us still feel that the drug has therapeutic value and that all our results are not of psychotherapeutic nature. The evidence that Dr. McMahon has presented is certainly indicative of changes in the electrocardiogram, evidence that the drug is having some sort of effect.

There are experimentalists who are beginning to change their attitude a bit, and the balance is again turning toward the viewpoint of our clinical experience.

The work of Gold, as contrasted with that of Riseman and Harrison and others, seemed very discouraging, to say the least, but some of us feel that therapeutic nihilists are warped a bit in their attitude, and we, on the other hand, therapeutic enthusiasts, may have stepped over a little bit in our attitude. We will assume gradually a position that is rational.

The dosage is of some significance. I might just cite again some of the points that Dr. McMahon made that those of us who are most interested in the field recognize as important points. A dosage of 9 to 15 grains of aminophyllin will often irritate the stomach; yet, as Dr. McMahon stated, heavy dosage by mouth is required in order to get results. When too irritating, other substitutes must be used.

The intravenous method Dr. McMahon used for his electrocardiographic demonstration effect is the one way of administration by which even the pharmacologists admit the drug has merit in certain disorders, and the rectal administration that he mentioned is of interest particularly.

He did not stress in his talk as he did in his paper the use of aminophyllin at night in cases having paroxysmal nocturnal dyspnea. He spoke of insomnia. Usually we take the dosage up to the last thing in the day in order to overcome insomnia and use rectal administration in severe orthopneics. Some of them are not bothered by insomnia, but every once in a while dropping off the last dose in the day will allow the patient to sleep.

The Committee on Pharmacology and Therapeutics has pretty much accepted Gold's contentions and recognized the drug only as a myocardial stimulant. That is peculiar and it is hard to understand why it is a myocardial stimulant if it is not, as Dr. McMahon explained, by vasodilatation of the coronary bed. The respiratory stimulating and bronchial relaxing or pulmonary circulation effect of aminophyllin have not been accepted by the Council yet as proven. Aminophyllin certainly has been accepted by allergists as the emergency drug of choice in epinephrine-fast status asthmaticus. It would be interesting to hear Charlie Eyermann or some other allergist discuss that phase of the subject. How it affects the respiratory center, the bronchial relaxation, is problematical, but those of us who are interested in circulatory matters feel it is by its effect upon the medullary and pulmonary circulation are important just as we feel that its effect in the kidney is by its effect upon the vascular bed.

The evidence that Drs. McMahon and Nussbaum have presented by electrocardiograms must be extended to longer than twenty minutes. There are favorable changes in the T waves even when the rate increases. We may speak of the T waves changes as evidences of improvement. This certainly argues for an effect upon the circulation in the myocardium rather than any other modus operandi. There was an occasional discordant result in some of the curves that he sent to me. This is hard to explain. There is no explanation for a change of T waves to negativity. Those must be studied more in detail later. Drs. McMahon and Nussbaum's study certainly reopens the field and justifies the further application of another method of gaining evidence on the effectiveness of this important drug.

Dr. O. P. J. Falk, St. Louis, Mo.—My own interest in the clinical use and potentialities of theophylline was stimulated in the course of preparing a report to the American Therapeutic Association a few months ago.

To sketch briefly the limitations: in the first place, I do not believe that the theophylline derivatives have any beneficial effect in the routine treatment of uncomplicated hypertensive states, particularly some of the tablet preparations that contain barbiturates which are sometimes poorly tolerated in the older hypertensive subjects. In the second place, I have not found that the theophylline derivatives are of any value in coronary disease with the anginal syndrome unless there is some evidence of associated myocardial insufficiency, either fully expressed or in a subclinical stage.

The favorable influence of theophylline upon the dyspnea of cardiac failure may be attributed in part to its simultaneous effect upon coronary and cerebral circulation. Green, Paul and Fuller noted that the effect of its intravenous administration was to reduce the

venous and intrathecal pressure in each instance toward the end of the injection of 30 c. c. of a solution containing 7½ grains (0.48 gram) of the drug. This reduction in venous and intrathecal pressure coincided with the relief of mild paroxysmal attacks of dyspnea, and also the restoration of breathing regularly in those cases with Cheyne-Stokes' respiration. I have been able to corroborate these observations, and have found that the conventional intravenous ampoule containing 0.24 gram (3¾ grains) was inadequate, and had been using 0.48 gram (7½ grains) intramuscular ampoule, diluted to 10 c. c. with distilled water and given slowly by vein until the large 20 c. c. (7 grain) ampoule was recently made available. I have found this method and dosage to be effective for the symptomatic relief of Cheyne-Stokes' respiration, and for the relief and prevention of the milder attacks of paroxysmal dyspnea occurring in the early stages of arteriosclerotic and hypertensive heart disease. Intravenous aminophyllin is also effective at times for the relief of paroxysms of bronchial asthma, even after epinephrine has proven ineffective.

Theophylline ethylene diamine (aminophyllin) in the same 7½ grain (0.5 gram) dosage in a rectal suppository, combined with extract of opium and benzocaine has proven an effective measure in the prevention of certain types of nocturnal restlessness due to waves of Cheyne-Stokes' respiration, as encountered in the course of hypertensive heart disease. Even the lesser degrees of paroxysmal nocturnal dyspnea, or the nocturnal coughing attacks, which sometimes represent the preliminary stage of cardiac asthma, may be prevented by this rectal medication. In the milder instances I have found the rectal administration almost as effective as the intravenous introduction of the drug for the prevention of the attacks, and certainly more practical when the patient is being treated at home. It has been my observation that this type of case is not infrequently intolerant of the larger dose of the drug by mouth, which is necessary to prevent the attacks. Combined theophylline and digitalis therapy have been more effective than digitalis alone in the treatment of arteriosclerotic myocardial insufficiency, particularly when accompanied by some degree of congestive failure. This is the type of case in which the mercurial diuretics show their most effective response, and it has been my observation that the combination of theophylline with "salyrgan" now procurable on the market is more effective than the uncombined mercurial preparations. The action is synergistic; the xanthine increases glomerular filtration while the mercurial diminishes tubular reabsorption.

Theophylline by mouth has also proven of value in the symptomatic treatment of moderately severe attacks of bronchial asthma. It is my custom to employ a capsule containing 5 grains of theophylline ethylene diamine (aminophyllin) with ¼ grain of "neosynephrin" and ½ grain of phenobarbital sodium, repeating in 2 to 3 hours as necessary. For the treatment of particularly severe or intractable attacks, often unresponsive to epinephrine, I have found that the intravenous injection of 7½ grains of aminophyllin frequently gives strikingly beneficial results.

To summarize: the theophylline compounds are valuable drugs for the treatment of the following complications of heart disease:

(1) Intravenously as a supplement to morphine hypodermatically, for the relief of the severe paroxysmal nocturnal dyspnea attacks of arteriosclerotic and hypertensive heart disease.

(2) Intravenously, by rectum or by mouth for the prevention of the milder episodes of paroxysmal nocturnal dyspnea and Cheyne-Stokes' respiration, occurring in the same type of heart disease.

(3) Combined with digitalis by mouth, and the mercurial diuretics intravenously, for the control of congestive heart failure occurring in arteriosclerotic and hypertensive heart disease.

(4) The use of the drug by mouth seems indicated in the treatment of certain types of chronic coronary insufficiency with angina pectoris, particularly when occurring with hypertensive heart disease in which there is some clinical expression of myocardial insufficiency.

The use of the theophylline derivatives seems justifiably indicated for the symptomatic relief of certain episodes of bronchial asthma. It has been my observation that theophylline and its derivatives are ineffective in the therapy of uncomplicated vascular hypertension and as routine therapy in chronic coronary insufficiency, whether fully expressed or relatively occult.

I have been impressed by the frequency with which this drug gives rise to distressing indigestion when used by mouth following the immediate recovery period from a coronary occlusion, but have used the drug intravenously in certain critical phases following the acute seizure, along with papaverin intravenously, before the period of circulatory readjustment has been completed. After this has occurred, the routine oral use of the drug in adequate dosage seems justified.

THE ROLE OF STREPTOCOCCUS IN SOME DENTAL INFECTIONS*

A STUDY OF RESIDUAL AREAS

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and

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By residual area is meant an abnormality that remains either in the soft tissue or in the alveolar bone after the removal of a tooth, particularly an infected one. These areas have been found even up to 20 years and longer after the extractions. The most recent areas would be those found six months to a year after extractions at a time when normal bone should have had time to regenerate.

Early in April of this year, Dr. Alfred Augustine, oral surgeon of Miami, Florida, talked with one of us about some cases from which he had removed residual areas. The results obtained interested him and aroused in him a desire for further investigation. These patients

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had symptoms of a chronically infected tooth, such as symptoms of arthritis, neuralgia, dermatitis and symptoms of other disorders usually attributed to a focus of infection. He asked for some laboratory help in an effort to determine whether infection might be present in these residual areas. There seems to be very little in the literature covering these cultural studies. The patients already operated upon by Dr. Augustine had improved so much that it was felt that a little more attention might be given to the study of a probably much overlooked source of focal infection.

This study includes cases in which residual areas were diagnosed on general dental examination only, as well as those who had symptoms generally thought to be due to focal infection. The cases with symptoms had all been under the care of competent physicians and no cause for their trouble had been found.

The care taken on the part of Dr. Augustine in making a diagnosis of a residual area capable of producing trouble has been an important part of this particular study. Several points have been considered in each case. There is usually a history of the extraction of an abscessed tooth. There may or may not be symptoms of focal infection. The roentgenogram may or may not show a defect in the alveolar bone or soft tissue. It should be emphasized here that the size of the area on roentgenogram is no indication of the probable amount of trouble present. One would even be justified in operating upon an area with a negative roentgenogram if the other suggestive conditions are present. Also, an area may resemble a residual area if the jaw is particularly thin. Palpation and inspection will help to differentiate here. Occasionally there is some local soreness or inability to wear a denture, but usually local symptoms and clinical signs are absent. No one point is diagnostic and all points are not necessary.

The procedure in obtaining cultures was as follows: at operation for the removal of these areas, curettings were taken under aseptic precautions such as described by Haden[1] and submitted to the laboratory on sterile swabs, placed in sterile test tubes. The direct smears from these curettings seldom revealed anything of diagnostic importance other than an occasional coccus or diplococcus in each smear. Twice we found fusospirochetes; once a short bacillus. This, in a general way, suffices for the direct smears. The cultures were made chiefly in 5 per cent glucose broth, cabbage media, and 7 per cent blood agar.

The series of cases presented is very small, but we feel that the results are significant. Sixteen patients had eighteen areas diagnosed. All these areas were removed by operation, and cultures made from curettings—areas from those that had symptoms of focal infection and from those without any symptoms. Fourteen of these patients had sixteen cultures, all showing a non-hemolytic streptococcus. The other two showed almost pure culture of a bacillus and of a Streptococcus viridans, respectively. Ten more cases have been cultured, but since the examinations were not made by the same individual, they will not be included in this study.

The tests for virulence have not been very satisfactorily carried out up to the present. We should like to mention a case in which a rabbit was given 4 c. c. of a 24-hour broth culture intravenously and died in 18 hours of pneumonia, a non-hemolytic streptococcus being recovered from both the heart and lungs.

A few typical cases will be presented together with lantern slides showing roentgenographic findings in each case. The first four cases are among those that stimulated interest in beginning this study. They all had symptoms of focal infection; all had significant residual areas diagnosed; all improved after operation. No cultures were made.

Case 3.—A 30-year-old woman who had not walked for two years was brought to the office in an ambulance. One residual area was removed February 28, 1939. Two months later she had improved so that she could walk across the room.

Fig. 1, Case 3

Two residual areas at sites of abscessed bicuspid and molar teeth which were extracted more than two years previously.

Case 4.—A 65-year-old man complained of weak eyes, neurodermatitis, and having to stay in bed months at a time beginning in August, 1937. Roentgenogram showed two large residual areas. There was much improvement after the first operation February 2, 1939, and complete recovery following removal of the second residual area, February 13, 1939.

Case 5.—A 40-year-old woman had excruciating neuralgic pain in the right shoulder for one week. Roentgenogram showed retained roots. The patient was completely relieved after surgery.

Case 6.—A 46-year-old woman had the right and left lower molars removed 20 years ago. Since that time she has had tenderness off and on in regions of the extractions, pain in shoulder and arm for the past three years, and severe headache with pain in the right cheek and infra-orbital region for the past 12 days. Operation on the right residual area was followed by relief.

The next four cases are typical of those who had symptoms and residual areas in which the areas were removed and also cultures made.

Case 8.—A 30 year-old woman complained of pain in the left arm. She had been treated in one of our large northern clinics for "severe neuritis and ulcer of the stomach." Four areas of residual infection were diagnosed. Two were surgically removed; both showed a non-hemolytic streptococcus. The ulcer is said to have improved, and the neuritis to have become somewhat less severe.

Case 9.—A 30-year-old woman had severe frontal headaches and pain about the right eye. An area was found where a tooth had been extracted 4 years before. Roentgenogram showed a small piece of root extending up into the antrum, also a small piece of amalgam. Surgery was done. Culture showed a non-hemolytic streptococcus. The antrum was drained. The headache was intensified at first and gradually disappeared as the antrum healed.

Case 10.—A 40-year-old woman complained of a "run-down feeling." A typical area containing several small pieces of amalgam was found and operated upon. Cultures showed a non-hemolytic streptococcus. Complete recovery followed.

Case 11.—A 50-year-old woman had excruciating right occipital headache and also menopausal complications. Two areas were diagnosed, where teeth had been removed 20 years before. They were both removed. A non-hemolytic streptococcus was found. She was much improved six weeks later.

The last four cases are examples of those who presented no symptoms. Significant residual areas were diagnosed on routine dental examination. All were operated upon and cultured. Two cultures showed a non-hemolytic streptococcus. One showed a Streptococcus viridans and one a staphylococcus, as well as a non-hemolytic streptococcus.

Case 20.—A 35-year-old man had an abscessed tooth extracted more than five years previously. There were no symptoms. A residual area was diagnosed. Operation was done. Culture showed Streptococcus viridans.

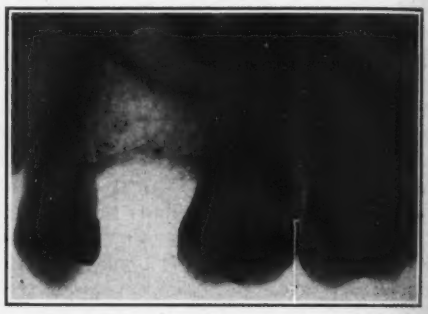

Fig. 3, Case 9
Residual area at site of abscessed bicuspid removed four years previously, showing piece of amalgam and a tooth root extending up into the antrum.

Fig. 2, Case 4
Two residual areas at sites of two abscessed molar teeth extracted more than two years previously. Contrast between normal bone and residual area unusually well defined.

Fig. 4, Case 11
Residual area at site of molar tooth extracted more than twenty years previously, showing marked lack of regeneration of normal bone.

Case 21.—A 26-year-old woman without symptoms was found to have a significant residual area about a piece of root. The area was removed. Culture showed a non-hemolytic streptococcus.

Case 23.—A 26 year old woman without complaint showed a residual area about a root and particles of amalgam. Surgery was done. Culture showed mostly staphylococcus. There were also a few long chains of streptococcus of the non-hemolytic type.

Case 30.—A 50-year-old woman complained of a sinus infection. Routine dental examination revealed a significant residual area. She was operated upon. Culture showed a non-hemolytic streptococcus. Since there was no local connection between the infected residual area and the infected sinus, and since there were no constitutional symptoms, this case is classed with those presenting no complaints usually attributed to focal infection.

SUMMARY

(1) Residual areas are usually areas of infection. No sterile cultures were found in our series.

(2) Attention is called to a frequently overlooked focus of infection.

(3) The diagnosis of probable infection in these areas is an individual problem in each case based on fairly well-defined criteria.

(4) Removal of selected residual areas caused improvement in symptoms in almost all cases of this study.

(5) In a series of 18 areas in 16 patients, 16 areas showed a non-hemolytic streptococcus.

Fig. 5, Case 21
Residual area at site of molar extracted more than two years previously, showing a piece of amalgam and a piece of root.

Fig. 6, Case 30
Residual area at site of abscessed molar extracted more than twenty years previously, showing outlines of double root area where bone has not regenerated normally.

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DISCUSSION (*Abstract*)

Dr. Marguerite T. Dean, Memphis, Tenn.—While oral residual areas of infection may be frequently overlooked in practice by both the physician and the dentist, the importance of their diagnosis is stressed in dental education. In the surgery clinics at the University of Tennessee Dental School, we have treated many patients for impactions, retained root tips and particles of amalgam, as well as residual areas, in edentulous parts of the mouth. The value of complete and frequent oral radiographic examination is stressed in our instructions to the dental student.

We have not attempted any cultural studies of these residual areas, but we have compiled certain data on the bacteriologic findings of abscessed teeth and teeth with devitalized pulps. In obtaining the specimens for this work, even under the aseptic precautions described by Haden, we have found it very difficult to prevent contamination by the saliva. Especially did this difficulty exist in the molar regions. Atropine sulphate was sometimes administered as a preoperative measure to control the flow of saliva. The use of the rubber dam was a helpful measure, but not always a reliable one, even when close union between it and the tissues was obtained with collodion, gum resin or similar substances. Since non-hemolytic streptococci are commonly found in the saliva and on the normal oral tissues, contamination by these organisms is very difficult to rule out. It would be interesting to know the exact steps followed by Dr. Augustine in obtaining his specimens for cultural studies.

In culturing periapical tissues, Rosenow, Haden and others have stressed the control of oxygen tension as a most important factor. In our bacteriologic studies just referred to and others on gingival exudate, the degree of lowered oxygen tension appears to be a determining factor in the stability of morphology, staining reactions, and viability of certain streptococcic and other bacterial strains. Dr. Hobbs, what observations have you and Dr. Youmans made in your studies in re-

gard to this environmental factor? Have you been successful in maintaining viable cultures on successive transplants?

Since the strains of the alpha and gamma streptococci have not yet been differentiated with any degree of success, and even numerous attempts to classify them by means of agglutination tests have failed, serologic tests are not available to establish the proof that the organisms grown were recovered from the oral tissues in question.

Much has been written about bacterial allergy which suggests the test for a hypersensitive state in these cases. Certain of the reported systemic symptoms are characteristic of a bacterial hypersensitiveness. It has been shown by Koch and others that an injection, according to a prescribed technic, of the bacterial strain for which an individual has acquired a hypersensitiveness will cause a reaction of symptoms.

Granting that uncontaminated specimens from the hard and soft investing tissues of the teeth can be obtained and that the organisms cultured from them do exist in such areas, the question is suggested to what extent are such dental foci related etiologically to systemic disease?

Some of the cases reported by Dr. Hobbs, beautifully illustrated by the slides, are quite convincing that the immediate relief of systemic symptoms was due to the surgical treatment. We have made similar observations, quite as dramatic, but such improvement of systemic abnormalities frequently does not occur. In some cases that have been diagnosed by competent physicians who have failed to locate the trouble, surgical treatment of suspected oral residual infection has apparently given little, if any, relief.

Before one is justified in attributing etiologic importance to this type of oral focal infection, he should make follow-up examinations to determine whether permanent relief has been obtained. Our follow-up work in the school clinics has been quite incomplete due to lack of cooperation on the part of the patient. The private practitioner is not likely to be so handicapped, and it will be interesting to know if any recurrence of symptoms will be observed in Dr. Augustine's cases.

Dr. R. D. Baker, Durham, N. C.—Was control material cultured? One would like to know whether or not the same organisms could be grown from alveolar tissue taken almost anywhere from the gum. Such tissue might be obtained in a control series of cases close to wisdom teeth which were about to be extracted because of impaction or because of some other reason. This tissue could be cultured for a control in a fashion identical to that used in the cases reported.

Dr. J. R. Schenken, New Orleans, La.—I should like to call your attention to some work that more or less supports this observation, even though there is definite criticism of course of the possibility of obtaining a culture from an alveolar ridge without the danger of contamination. This work was done in a dental clinic by Palmer and Kemp, who obtained blood cultures within a few minutes after the extraction of not more than two teeth. Other investigators have shown this same phenomenon and demonstrated a direct relationship between the per cent of positive blood cultures and the amount of dental manipulation, the majority of the cases showing marked dental disease. In Palmer and Kemp's survey many of these teeth were extracted by choice, not necessarily because they showed anything abnormal on the x-ray film.

Of course, many dentists recognize the fact that with the extraction of one tooth at a time or, at the most, two teeth, the patients seem to get along much better than if three, four or five are removed. I think that this work substantiates very well the clinical observation that a limited number of teeth should be extracted. It also shows that any mechanical disturbance of a large area of the alveolar ridge may lead to the invasion of organisms which exist in that ridge, even though there is no roentgenologic evidence of their existence.

Dr. Hobbs (closing).—Dr. Augustine used the technic of Dr. Haden, which consisted in packing off the area with sterile gauze, painting the gums with iodine or a mercurial, followed by alcohol, and the use of suction to take care of the saliva. He also used the flap incision and in the later cases, I am not sure whether reported in this group or not, has taken two cultures, one just after he opened the flap, and one farther down after he had almost completed the curetting.

As far as the control of the oxygen tension is concerned, I am not familiar with that part of the laboratory procedure, but I have heard Dr. Youmans say that when she did virulence tests she had to inject the material of a 24-hour culture. She very quickly lost the cultures in the laboratory.

As to the relation of allergy to the symptoms in the cases reported, it seems significant that there was observed a number of times an exacerbation of symptoms immediately after the operation and later remission. However, the frequency with which the same organism, the non-hemolytic streptococcus, was found in many individuals seems to me to indicate more than allergy.

Of course, there can conceivably still be doubt that the infection found in these residual areas is responsible for the production of the symptoms in the cases reported. This cultural study was begun as recently as April of this year, seven months ago. Cases of this type have long been known to have remissions and relapses. There has hardly been time to observe a relapse. This must, therefore, be designated a preliminary report. Certainly it is not made to present another cure-all, but to call attention to some cultural studies made in a private laboratory, which, together with the gratifying results obtained after the curetting of these areas, would suggest an important source of focal infection which has been frequently overlooked.

Dr. Baker's discussion was very interesting. Control material from normal bone would be difficult to secure in a group of private patients. Recently two separate culture specimens have been taken, one just following the flap incision and one deeper in the area. There have been no cultures of the gums or throat and no blood cultures of the cases reported. I cannot see that a culture taken from the socket after a healthy tooth is extracted could possibly be secured under as careful precautions as a culture which is obtained during the removal of a residual area, an area which has been completely healed over for many years. Such a culture would be useless as a control.

I am very anxious to have any suggestions about how to control further work.

CONTROLLED ROTATION OSTEOTOMY OF THE TIBIA*

By D. H. O'DONOGHUE, M.D.†
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One of the major factors in production of disability in children, as observed in a large clinic for treatment of orthopedic conditions, has been an abnormal relationship between the axis of motion of the hinge joint at the knee with that of the functionally hinge joint at the ankle. In a large number of cases, there has occurred a definite rotation of the lower leg with a disturbance of relationship between the knee and ankle, so that when the axis of the knee is placed in a directly transverse position the axis of the ankle joint is turned either outward or inward to a varying degree. This is particularly true in cases in which there has been a rather long-standing deformity of the foot which has resulted in a compensatory twist of the leg. Following operative procedure for correction of the foot, in which it is necessary to line up the foot with the ankle, the rotation deformity is often exaggerated by the correction of the foot. I have observed this particularly in deformities resulting from poliomyelitis and those resulting from club foot. For example, in calcaneovalgus deformity there is an external rotation of the foot, accompanied by an external rotation of the lower leg. Correction of the foot, in relation to the lower leg, throws the foot in marked external rotation. These facts have long been well understood and are presented only to call attention to the procedure to be presented here.

There have been many types of rotation osteotomy suggested which have proven satisfactory in many instances. Perhaps the greatest difficulty in my hands has been to determine the exact degree of rotation desired and then to obtain this degree of rotation at operation without variable factors acting to distort the degree

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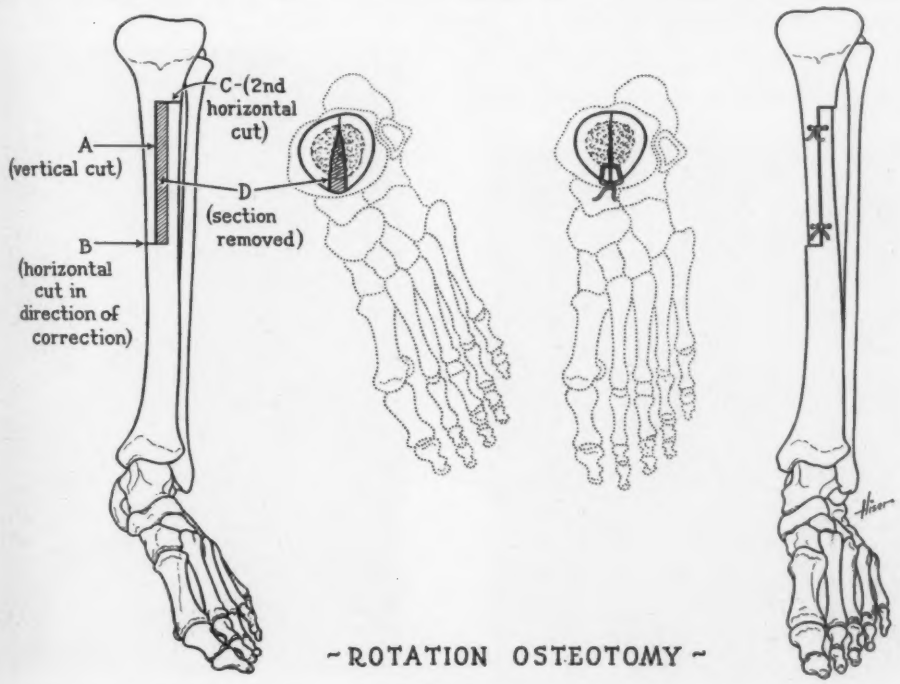

Fig. 1

Operative scheme. Note the most important point, namely, the amount of rotation is definitely fixed, the operation permitting no loss of rotary correction.

of correction. The chief variable factor is the fact that it is necessary to hold the foot and knee in the proper relationship while the cast is applied, and in so doing, particularly as it is advisable to apply the cast with the knee slightly flexed, it is almost impossible to determine exactly how much rotation is taking place through the relaxed knee joint and how much is actually taking place at the osteotomy site. The procedure presented here is a simple one, carrying with it no increased operative risk and no difficult technical problem. The time of operation is not prolonged over that of the ordinary osteotomy and trauma can be minimized by careful technic.

The plan of operation is simply a Z osteotomy. In carrying out a Z osteotomy in a circular tube, if a longitudinal strip of its circumference is removed, and the resulting edges are rotated together, a definite degree of rotation is obtained. This degree is fixed at operation and is in no way affected by the manner in which the cast is applied, which, to my mind, obviates one of the major variables in attempting to get an exact amount of rotation. In our earlier cases, the exact measurements in degrees were made in order to determine the amount of bone to be removed. As our experience became greater, we found that this was not necessary, since it was extremely easy to estimate the proper amount and remove more or less bone as the case indicated.

Operative Technic.—The skin having been carefully prepared in the usual manner, incision is made to expose the shaft of the tibia from a distance about one inch below the tibia tubercle, four or five inches distally. Care is used to avoid leaving the scar directly over the subcutaneous anteromedial surface of the tibia. Periosteum is incised linearly, medial to the crest of the tibia and separated from the tibia throughout its entire circumference for a distance of about four inches. Using the motor saw, the anterior cortex of the tibia is cut, paralleling the crest and about one-half inch medial to it. If the bone is small, it is advisable to protect the under surface of the tibia by malleable retractors passed completely under the bone within the periosteum. At this point, consideration must be given as to whether the foot is to be rotated inward or outward. The osteotomy is of a Z type, direction of rotation depending upon the position of the arms of the Z. If the desired rotation is to be inward, the upper arm of the Z

Fig. 2
X-rays immediately postoperative.

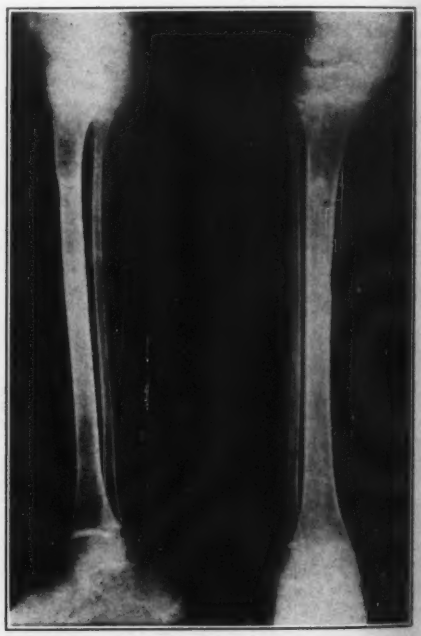

Fig. 3
X-rays six weeks postoperative, showing solid bony union, obliteration of osteotomy line.

must be cut from the linear incision toward the outer border of the tibia, the lower arm of the Z beginning at the lower end of the linear incision and extending toward the medial border of the tibia. (If rotation is to be outward, the upper cut extends inward, the lower outward.) These cross cuts can be made either by saw, osteotome or by multiple drill holes through the cortex, depending upon the hardness of the bone. Soft tissues must be protected by a malleable retractor completely encompassing the posterior two-thirds of the circumference of the tibia. The linear section of the posterior cortex of the tibia is now completed by driving the osteotome vertically through the saw-cut at successive levels from above downward, care being taken to protect the soft tissues by a malleable retractor. We now have a practically complete Z osteotomy of the tibia, only a small portion of the posterior cortex acting as a hinge. Using the saw or osteotome, a second linear cut is now made on the proximal segment of the tibia, paralleling the first incision. By means of this procedure, a longitudinal strip of the anterior cortex, its width depending upon the degree of rotation to be desired, is removed. Approximation of the anterior cortex edges will now accomplish the desired rotation. It has been my practice to place two corresponding drill holes about one-quarter of an inch lateral and medial to the linear incision, each one being about three-quarters of an inch from the proximal and distal transverse hemisection. Chromic suture threaded through these drill holes maintains perfect approximation and remarkable stability. The exact amount of rotation desired is regulated by the amount of bone removed and there is no possibility of change of position following application of the cast. The periosteal tube is now closed without drainage, subcutaneous tissue approximated and the skin closed with silk. A long leg cast is applied with the knee slightly flexed, with no necessity for guarding the position following closure of the wound, complete stability being assured by the chromic suture.

Fig. 4
X-rays three months postoperative, showing complete restoration of normal contour.

Should the opposite direction of rotation be desired, namely, from within outward, the transverse hemisections of the tibia are made in the opposite direction; that is, the upper cross cut runs from the upper extremity of the linear incision toward the crest of the tibia, the lower cross cut running from the lower end of the linear incision to the outer angle of the tibia. Removal of a section of bone and approximation of the two linear incisions will now accomplish external rotation of the foot. The entire procedure is carried out under tourniquet and is bloodless. It is possible in this procedure to carry out a certain amount of correction of varus or valgus deformity at the knee by varying the parallel position of the two linear saw cuts. This procedure is not advisable, however, for major lateral deformity.

In after care it has been our practice to leave the cast intact for six weeks. Uniformly, there has been a solid union at this time. It probably would be permissible in many instances to remove the cast in three or four weeks. However, we have desired to err on the side of over-immobilization. If not indicated by other conditions, no brace or other support is necessary. We intend to check a series to determine whether the time in the cast cannot be reduced to fewer weeks.

This operation has been carried out in very many cases since the first operation, five years ago. The majority of cases have been to correct external rotation of the foot, resulting from poliomyelitis and internal rotation of the foot resulting from club foot. In our experience we have felt it advisable to correct the deformity

of the foot prior to rotation osteotomy, and by that means the exact degree of rotation which is desired can be definitely determined. In this period of time, there has been no case of non-union; no case of return of the deformity at the osteotomy site; no instance of any fracture of one or the other arm of the osteotomy; and no instance of any infection. There have been no untoward results from this operation in the series which have been done to date.

DISCUSSION (*Abstract*)

Dr. Austin T. Moore, Columbia, S. C.—Dr. O'Donoghue has presented to us a very accurate technical procedure. A definite degree of rotary correction can always be obtained by this method, but frequently there is a problem of correcting alignment as well and in such an instance this operation would not be suitable. A bowing deformity can be better corrected by a simple transverse, an oblique or a cuneiform osteotomy. So far as my own practice is concerned, we do relatively few osteotomies. Many cases undergo spontaneous correction as is demonstrated in the correction that takes place following reduction of congenitally dislocated hips. If left alone, many of the cases of internal rotation deformity will spontaneously correct themselves without osteotomy. Most osteotomies, such as were described by Dr. O'Donoghue, are done to correct deformities resulting from poliomyelitis or from club feet. In both of these conditions preventive treatment is best. The development of rotational deformity is inexcusable if treatment is begun early.

We usually perform a simple transverse osteotomy. I do not recall having had any especial trouble with slipping of the fragments. Where an accurate degree of rotation has been desired, I have put in two pins one of which is offset the desired number of degrees from the other. Osteotomy is performed between the pins and when the bone is rotated so as to bring the pins parallel to each other, correction is perfect. The pins are bound together and they hold the fragments in apposition until union is firm. Another simple method is to do a transverse osteotomy between two drill holes, one of which has been placed the desired number of degrees away from the mid line. When both drill holes are brought together in the mid line, correction is completed and the fragments may be held in place with a small absorbable suture.

While I wish to give Dr. O'Donoghue credit for an accurate mechanical procedure, it seems to me that it is a little too formidable surgically for the average case.

Dr. J. Hiram Kite, Atlanta, Ga.—In most of our cases with infantile paralysis there is a tibia torsion, especially in the older children, which needs to be corrected. I have no objection to Dr. O'Donoghue's doing this extensive operation in his own clinic, but I do not believe so radical an operation should be recommended for everyone to do. He can do it without getting infections, but the simpler osteotomies apparently give good result. I do not use an incision more than 3 centimeters in length. Curved retractors are slipped beneath the periosteum and the bone cut about two-thirds of the way through and green-stick fractured. I have not had any trouble in undercorrecting or overcorrecting. His operation would not be difficult for one skilled in orthopedics, who has good technic, but for others it probably would be flirting with danger to do so much surgery on these cases.

There is a trick in putting on the cast that I like. After I have done the osteotomy, I put the cast on from the toes up to the point of osteotomy. Then begin again just above the osteotomy and continue to the upper thigh, moulding the cast carefully about the knee and condyles, outlining the patella on the cast as the cast hardens. Then, when these two segments have hardened, you can roll the foot inward until your sense of feel tells you that you have gotten the foot correctly aligned with the patella. The two segments of the cast are then joined together with plaster. In this way you will not overcorrect or undercorrect the torsion. In these cases, four weeks have been our usual time in the cast, before proceeding with operation on the foot.

We do our osteotomies before we do our foot stabilizations and they have united in children sufficiently securely in four weeks to go ahead with the stabilization. In children in the 'teen age, five or six weeks are necessary for them to be strong enough for the next step. The correction of torsion of the tibia is a very valuable procedure on which we are all agreed. The question is that of technic. Dr. O'Donoghue has demonstrated an ingenious method.

Dr. Wade Sisler, Tulsa, Okla.—Dr. O'Donoghue's procedure is a very valuable one. I have had what I consider good luck with the transverse osteotomy. I have had no great amount of difficulty with it. I have been able in most instances to secure the correct amount of rotation to leave the two fragments in the proper level. However, in some of the instances in which I have done transverse osteotomies, I have found that the fragments have a tendency to displace to one side or the other, and I have had to do internal fixation with wire or by some other method.

Dr. Herbert E. Hipps, Marlin, Tex.—Most often there is not a simple rotation deformity of the tibia in these cases. There is a valgus deformity associated with this rotation in by far the larger percentage. This particular operation beautifully corrects the rotation, maintains accurate approximation of the bone, and is an excellent procedure where rotation alone is present.

The simplest osteotomy for correction for both valgus and rotation in a tibia is what is known as the wedge osteotomy. At the junction of the cortical and cancellous bone and still below the epiphysis, a wedge osteotomy is done with the apex of the wedge upward. This gives easy rotational and lateral correction and still maintains rather good bony contact. The incision is about one and one-half inches long and it takes almost five minutes to do this particular operation. I have never yet seen a non-union in an osteotomy done this way.

Dr. Paul C. Colonna, Oklahoma City, Okla.—I have seen Dr. O'Donoghue employ this procedure a number of times and I think one is impressed with the mechanical nicety of the operation, which meticulously puts bone against bone and holds it in that position.

The criticism that has been offered to date is whether we are making a large operation out of a simple procedure. First, I do not feel that that is particularly a

valid objection in many cases, for we can obtain a more accurate apposition.

Secondly, I think a little more valid objection is the fact that if you have valgus or varus, it is more difficult to correct at the time when the bone ends are firmly and securely approximated.

Dr. O'Donoghue has described a technical nicety that is worth bearing in mind.

Dr. O'Donoghue (closing).—Correction of varus and valgus can be obtained very easily simply by not making the cut parallel, that is, making it broader or narrower at each end and swinging the bone to fit. I will admit the procedure looks a little formidable but after you have done it a time or two, it is really very easy, and I have a great feeling of satisfaction in knowing that when I am through with it, the correction is fixed and will not be varied by any other factor.

ISOLATED BILATERAL FRACTURE OF THE FIRST RIB*

CASE WITH UNILATERAL HORNER'S SYNDROME

By J. KULOWSKI, M.D.
and
J. H. RYAN, M.D.
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Isolated fracture of the first rib has been so infrequently reported that Breslin[1] (1937), who added 5 cases of his own, was able to collect only 27 other instances of this injury from the world literature. Since then Outland and Hanlon[2] (1938) have reported a case, and the foreign literature refers to several others. Rebhorn's[3] (1933) report of a case complicated by a Horner's syndrome is of particular interest, since the uniqueness of these injuries depends entirely upon the vulnerability of adjacent structures. The surgical significance of this situation was, therefore, suspected by anatomists long before it was clinically established.

Our case is of particular interest because the fracture was bilateral and attended by a left Horner's syndrome. The exact relationship of the latter to the osseous injury is not clear-cut on account of the associated intra-ocular and intracranial complications also present.

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Anatomy.—The first rib is anatomically distinctive because it is the shortest, strongest, flattest and most curved of all the ribs. Since it is not twisted, it is almost horizontally placed in the mid neck so that its two flat surfaces face upward and downward. It has no subcostal groove. As it articulates only with the first thoracic vertebra, the head and neck are small and present one articular facet. Its upper surface has two shallow depressions separated by the scalene tubercle. Its junction with the sternum anteriorly through its costal cartilage forms a synchondrosis.

Thus the first rib, its cartilage, the first thoracic vertebra and the manubrium form a single rigid unit, except for the elasticity of the cartilage and slight hinge-like respiratory movements. Sibson's fascia (pleural dome) clothes the deep surface of the scalenes and is attached to the sharp upper (medial) border of the first rib. The cupola of the pleural dome reaches up into the uppermost opening of the thoracic cage so that the apices of the lungs are beneath the scalenus anterior muscle above the clavicle.

The superior mediastinum and the great vessels, especially the innominate, may reach high into the base of the neck (Prentiss, *Fig. 1*). The subclavian vein passes over the depression in front of the scalene tubercle, and the subcla-

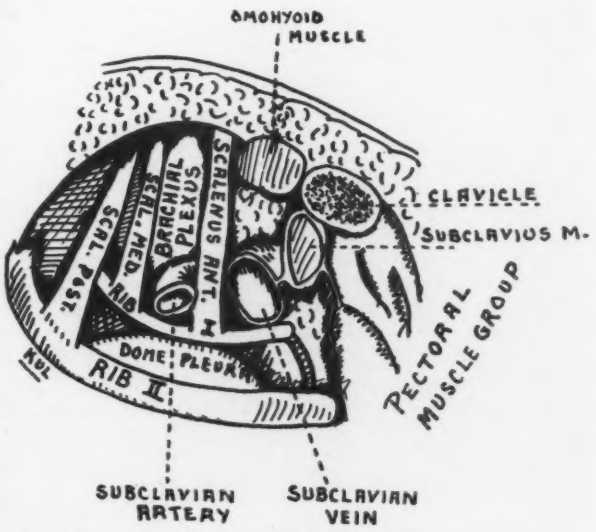

Fig. 1

Apex of right thorax showing the relations of the pleural dome and brachial plexus to the first rib (plexus emerging between the anterior and medial scalene muscles); and particularly the relations of the subclavian artery and view to the anterior scalene muscle and the first rib (redrawn from Callender).

vian artery and the lowest trunk of the brachial plexus pass behind it. Between the groove for the subclavian artery and the posterior tubercle of the rib there are attached the scalenus medius, levator costae and the first digitation of the serratus anterior muscles. The first rib is intimately connected to the clavicle through the subclavius muscle, the costoclavicular ligament and the intra-articular fibrocartilage of the sternoclavicular joint.

The inferior sympathetic cervical ganglion is intimately related and lies practically upon the neck of the first rib. Not infrequently it is only imperfectly separated from the first thoracic ganglion and sometimes fuses with it to form the stellate ganglion. Piersol says that the inferior cervical sympathetic ganglion is over the first costocentral articulation, between the neck of the first rib and the transverse process of the seventh cervical vertebra. It is situated in the external angle between the subclavian and vertebral arteries and is usually connected above with the middle ganglion by an association cord. Sometimes, especially on the left side, it forms a nervous ring around the subclavian artery.

For purposes of surgical approach, Prentiss taught that the inferior ganglion lies in the triangle between the anterior scalenus and longus coli muscles. The vertebral artery is just behind the anterior scalenus and medial to the ganglion. The sympathetic chain is attached to the posterior portion of the great vascular sheath. This chain lies behind the prevertebral fascia, but pierces it at the level of the sixth cervical vertebra.

Mechanism of Fracture.—The deeply situated first rib is adequately protected against direct injuries or violence by the clavicle in front, and the scapula posteriorly together with the muscles of the shoulder girdle. Its very rigidity and intimate connection with the spine and sternum make it peculiarly vulnerable to indirect or transmitted forces. Lane stated that fracture may occur in three ways: by indirect violence or force transmitted through the clavicle, directly by force applied behind and indirectly by force applied through the manubrium sterni. Forces applied to the clavicle with the shoulder depressed or violent movements of the cervicodorsal spine probably account for most of these injuries.

Complications.—The severity of the immediate or late complications that may result from fracture of the first rib determines the subsequent disability. On the basis of the literature and his own cases, Breslin emphasizes the following complications that may occur during or after fracture of the first rib. There may be observed abscess formation above or below the clavicle. Rupture of the apex of the lung, emphysema, pleurisy and hemorrhage are not infrequent. Nerve complications are especially interesting and may come on immediately or a few months later when callus is sufficiently large to encroach upon the nerve pathways. The significance of these nerve complications might well be overlooked unless one keeps such possibilities in mind. Our own case further illustrates the obstacles to accurate evaluation of an associated Horner's syndrome. Rebhorn's case is therefore worth reviewing in some detail.

His patient was a white male, aged 21 years, who had sustained a squeezing injury and violence through the upper left chest and shoulder involving the lower part of his neck 55 days previously. There was general muscle atrophy about the shoulder with marked limitation of motion at the shoulder joint. He held the head tilted to the left side. Although the hand and forearm were objectively not remarkable, the patient complained of a cold sensation in the hand. The x-ray revealed fracture of the first rib and scapula. It was concluded that there was evidence of brachial plexus injury along with signs and symptoms that could be attributed to his fractured rib. Physiotherapy was instituted, but his progress was slow.

Several weeks later the patient noted and brought attention to the fact that there was marked dryness of the skin on the left side of his face associated with a burning sensation on the left side of his face, neck and shoulder, with tingling in the little finger. Examination revealed a classical Horner's syndrome plus evidence of injury to the ulnar nerve. Rebhorn concluded that the syndrome was due to pressure in the supraclavicular fossa incident to the fracture of the first rib. The posttraumatic extravasation of blood and callus formation had developed a mass sufficient to cause pressure upon the nerve structures in this region. The final end result was not given in his report.

His further discussion of the syndrome quotes Wechsler as follows:

"Paralysis of the cervical sympathetics results in miosis, narrow palpebral fissure, enophthalmos, pseudoptosis, absence of the ciliospinal reflex, flushing of the face and neck due to vasodilatation, and raising of the local temperature. Because the oculomotor nerve is intact the pupils react to light and the lid can be raised. There may be excessive or diminished lacrimation and diminished salivation. Anhidrosis, while generally present, is inconstant. The pupil does not dilate on instillation of cocaine; epinephrine may cause dilatation.

The syndrome may be observed in lesions of the medulla and pons, more rarely of the midbrain and cortex plus plexus and root encroachment as the result of tumors of the neck, enlarged glands pressing on the cervical spine, of struma of the thyroid, neuroma of the sympathetic, cervical rib, aneurysm of the aorta, apical pulmonary tuberculosis, bullet or stab wounds and accidental injuries during operations on the neck.

It may follow therapeutic operations on the cervical spine occasionally with the syndrome of the retroparotid space, together with paralysis of the glossopharyngeal vagus, and hypoglossal nerves. There is a hereditary form of sympathetic paralysis in connection with facial hemitrophy. Rarely the syndrome is observed in diabetes, Addison's disease and exophthalmic goiter; but in the latter, signs of stimulation of the sympathetics are the rule. Under these conditions these symptoms are more marked on one side.

Symptoms.—Nearly all patients, in the absence of other severe injuries, complain of a "sticking pain" in the region of the shoulder following isolated fracture of the first rib. There may or may not be pain at the site of the fracture. Movement of the arm, head and neck will often cause pain at the base of the neck or shoulder. A characteristic symptom is said to be pain behind the upper part of the sternum on lifting with the hand on the affected side. This may be due to the fact that the first thoracic nerve lies about two inches in contact with the under surface of the first rib and ends at or near the sternum, the pain then being referred to the periphery. Other symptoms like dyspnea, fever and tingling of the arm are dependent upon complications. Any fullness in the supraclavicular fossa should arouse suspicion of this lesion which may be due to displacement of one or more fragments or to hemorrhage as was observed in our case.

Treatment.—The treatment recommended for the uncomplicated case is immobilization, since respiratory movement following fracture is increased. A circular strapping of the entire chest below the axillae will be satisfactory, or a Velpeau bandage with an axillary pad may be all that is required. Complications must be dealt with as indicated on the merits of the individual case. The disability will ordinarily last for approximately four weeks. It is obvious that initial hospitalization and supervision are wise on account of the possible intra- or extrathoracic complications that may occur.

CASE REPORT

Mrs. Roberta B., a white woman, aged 42 years, was admitted to the hospital shortly after a serious automobile accident. The patient was mildly shocked, disoriented and presented the following multiple injuries: severe lacerations involving the hands, face, scalp and ear. There was an extensive hematoma overlying what proved later to be a compound fracture of the left zygoma without displacement, and the left eye was badly contused. The blood pressure, pulse and respiration was not remarkable. She complained vaguely of pain about the left shoulder region. The immediate neurologic examination was not remarkable.

She soon lapsed into a stuporous state, from which she did not fully recover for about ten days. The following morning the left pupil was constricted, the right relatively dilated plus a questionable Babinski sign on the right. The patient was restless, held the head to the right, thus emphasizing a prominence of the left supraclavicular fossa.

Portable x-ray examination of the skull and cervical spine revealed isolated bilateral fractures of the first ribs; the right at about its mid point and the left at the tubercle with wide angulatory separation of the fragments (*Fig. 2*). Spinal puncture yielded bloody fluid, a pressure of sixteen millimeters of mercury and a negative Queckenstedt. Repeated ophthalmoscopic examinations were rather unsatisfactory.

Following signs and symptoms of intracranial injury, a conservative therapeutic course was adopted. Cervical traction and sandbags controlled the position of the head and seemed to lessen the patient's irritability. After the patient's sensorium was cleared, the highly characteristic signs of a Horner's syndrome were clearly evident on the left side. There were also signs of a peripheral facial nerve lesion as shown by a slight weakness of the left facial muscles below the forehead and a definite motor paralysis of the left frontalis muscle. She was discharged from the hospital about three weeks after her admission.

She returned for re-examination about 3 months later, saying that she was suffering from mild headache and some pain at the back of the head and neck, but that her general physical and nervous condition had steadily improved. Neurological examination still revealed a left Horner's syndrome (*Fig. 3*) and paralysis of the left frontalis muscle. There was still some fullness in the left supraclavicular fossa accompanied by tenderness. The chin was held a little to the right and there was marked limitation of movement of the head

Fig. 2

Anteroposterior x-ray view of the cervicodorsal region showing bilateral fracture of the first ribs; the right at about its mid point and the left at about the posterior tubercle with considerable displacement of the distal fragment in the latter.

Fig. 3

Photograph of patient taken about 4 months following her injury, which illustrates a typical Horner's syndrome and an associated peripheral facial paralysis on the same side.

to the left and in extension. X-ray examination revealed a fair amount of callus at the site of fracture on the right, but the left was still quite evident. There was also some callus formation along the left lateral margin of the fifth and sixth cervical vertebra probably due to a traumatic arthritis.

Re-examination about 10 months after injury still revealed slight evidences of the Horner's syndrome, slight separation of the retina on the left, definite residual arthritic symptoms of the cervical spine, slight evidences of left peripheral ulnar nerve irritation, and some moderate posttraumatic cerebral stigmata.

CONCLUSION AND DISCUSSION

A case of complicated bilateral isolated fracture of the first ribs is reported, calling particular attention to the associated sympathetic nervous symptoms. The case presented is unique in two respects: the bilateral fractures of the first ribs complicated by a unilateral (left) Horner's syndrome and associated with an undoubted intracranial injury, a peripheral facial nerve motor paralysis and retinal disturbance (left). At first glance the intracranial lesion might be held entirely responsible for the entire neurologic situation, since a lesion, theoretically involving a portion of intracranial pathways of the seventh nerve and the preganglionic fibers of the cervical sympathetics at any point of their course from their cortical center could do so. It is evident that an intracranial lesion that would produce such isolated symptoms is very unlikely whereas an injury to the peripheral portion of the cervical sympathetic and superior branches of the facial nerve is more readily explained in this case as due to the peculiar character of the thoracic and left zygomatic injuries.

Signs and symptoms of oculomotor disturbances are of sufficient occurrence to be of general interest to the profession. Their mechanism involves the third, fourth and sixth cranial nerves which, together, innervate all the voluntary muscles of the eye. Horner's syndrome involves exclusively the cervical sympathetic mechanism which innervates the dilator pupillae, the involuntary levator muscle of the upper lid, the orbital muscle of Muller and the sweat glands and blood vessels of the face. The cervical sympathetics find origin in the cerebral cortex from which fibers, through unknown pathways, descend to the hypothalamic region, thence to the pons and medulla; passing from there to the eighth cervical and first thoracic segments of the spinal cord and emerge to enter the inferior cervical ganglion. They then ascend as postganglionic fibers in the cervical sympathetic to their points of innervation. Thus a paralysis of the cervical sympathetic (inferior cervical ganglion or stellate ganglion) will produce the typical syndrome of Horner; enophthalmos, pupillary constriction, and pseudoptosis.

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PLACENTA ACCRETA*

CASE REPORT

By CARL E. BOSSHARDT, B.S., M.D.
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Placenta accreta is being seen and recognized more and more each year in this country as among the most serious and gravest complications of the third stage of labor.

The condition results from an absence of decidua basalis, either partial or complete, which is invaded by the chorionic villi which may sim-

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ply attach themselves directly into the superficial myometrial layer (placenta accreta) or penetrate deeply into the uterine muscle wall (placenta increta) or even perforate the entire uterine wall (placenta percreta). Because there is no definite line of cleavage between placenta and uterine wall, normal separation in the third stage of delivery is impossible.

Placenta accreta must never be confused with the rather common simple placental retention which is seen in an hour-glass constriction or from some failure of the normal mechanism of separation of a healthy placenta in a normal uterus.

HISTORY

The name is derived from Latin: Adcrescere, meaning "to grow to." The first case ever described was by Ahlfeld in 1889. In June, 1938, the 109th case was reported by Arthur G. King,[1] of Ohio, and this case brings the total to 110. "Morbid adhesion of the placenta" was a name given to it by the older clinicians as well as "adherent placenta" or "retained placenta."

The first blood transfusion mentioned in the literature given as part of the present treatment today was in 1928 by Jackson and Kraul.

The first vaginal hysterectomy done to cope with this situation was in 1897 by V. Weisse, but death resulted soon afterwards from peritonitis.

The first abdominal hysterectomy was done in 1900 by Alexandroff and the mother was saved, but the infant died.

Incidence.—The average incidence is one case in 14,622 deliveries, at two extremes: Kolag says once in 6,000 cases, while more recently Irving and Hertig[2] report once in 1,956 deliveries.

Symptoms.—Severe postpartum hemorrhage is the main distressing symptom, after failure to dislodge the adherent placenta and exclusion of an existing deep cervical laceration, or a uterine atony.

Etiology.—Much has been written about the probable causes of this anomaly. It is well agreed by most authorities that repeated pregnancies, previous manual placental removals, curettements for miscarriage, uterine sepsis, submucous fibroids, endometritis or atrophy of the uterine mucosa or defective decidua formation resulting from an insufficient or abnormal corpus luteum stimulation or other hormonal abnormalities may be the cause. It is problematical that the ovum itself may exert an excessive stimulation on the erosive power of the trophoblast, causing the villi to destroy the decidua basalis and burrow their way into the muscularis even as deep as the serosa. Kwartin and Adler suggest that there may be an insufficient anti-ferment production against the erosion effect of the trophoblast. Neither theory explains conclusively why a deficiency in the decidua vera is frequently found.

Treatment.—Since this condition can never be detected before delivery, it should be constantly kept in mind after the second stage. The therapy depends on prompt recognition of the abnormality either by manual intra-uterine examination or other clinical observations. Early hysterectomy is the accepted treatment of choice, preceded and followed by blood transfusion, if indicated and the usual supportive agents for shock. Manual extraction of densely adherent placentae either by hand alone or with placental forceps or curette is extremely dangerous and predisposes to fatal hemorrhage or puncture of the uterus. The mortality rate is 66.6 per cent by this procedure.

An interesting statistical table of methods of treatments in use today has been ably compiled by Irving and Hertig and was published in May, 1936.

In eleven cases treated by supravaginal hysterectomy with no attempts at extraction of placenta, there were no deaths listed. In comparison, using abdominal hysterectomy after partial manual extraction, thirty cases were treated with six deaths, or a mortality rate of 20 per cent. Also by manual extraction or curettage without hysterectomy, thirty-one cases were treated with twenty deaths, or a mortality of 64.5 per cent. The combined mortality of the treated series reported in 1931 showing eighty-six cases with thirty-two deaths was 37.2 per cent.

Case 31135.—Mrs. L. S. N., a housewife, tertigravida, aged 30 years, was first seen on February 7, 1939, for prenatal care. The first day of her last period was November 10, 1938. She had an uneventful pregnancy with no nausea or vomiting, edema of the extremities, elevation of blood pressure, or scotoma. She came into the hospital at full term, in labor. The expected confinement was estimated at about August 18.

The patient's past medical history revealed no severe il'nesses, no fevers and no operations. She had a miscarriage in 1937 at the third month; two previous pregnancies, one boy alive and well; one boy died, "blue baby," probably congenital heart disease, at 8 weeks.

The family history was essentially negative except that her mother died following a miscarriage. She denied venereal disease, alcohol and tobacco.

Physical examination was essentially normal for pregnancy at term in active labor with vertex in left occipito-anterior position. The membranes had previously ruptured at home without warning and pains every five

and one-half minutes followed for two hours when she was taken to the delivery room and delivered easily of a live female infant, weight seven pounds and nine ounces, by low forceps with the head in sight. Ether anesthesia was used. After waiting approximately one hour, the placenta was manually expressed because of intermittent passage of large amounts of blood with no sign of the placenta's separating. One ampule of obstetrical pituitary extract was given intramuscularly and one c. c. of ergotamine intravenously. The portion of the placenta removed was examined and found to be studded with many fibrotic areas about 2 cm. in diameter. We felt that it was not completely removed; a more or less macerated state existed. No intra-uterine exploration was done at this time. However, the cervix was inspected and no deep laceration seen.

The patient was transferred to her room, but the bleeding continued very freely and 1,000 c. c. of 5 per cent glucose was given intravenously and obstetrical pituitary extract was repeated. The patient was definitely in shock, with extreme pallor, cold, clammy skin, profuse perspiration, yawning and sighing respiration with a weak, fast and thready pulse. "Coramine" and caffeine sodium benzoate 7½ grains were repeatedly given along with hot coffee per rectum, as it was impossible to enter a vein due to circulatory collapse. Subcutaneous normal saline, 500 c. c., was started and nasal oxygen was given. Drs. R. A. Roberts and R. A. Miller were called in consultation. The lower extremities were tightly bandaged as far up as the thighs and the foot of the bed was elevated and the patient was kept warm with suitable measures. One thousand c. c. of 5 per cent glucose was again given as the circulation improved enough for us to enter the venous system. Later an additional 1,000 c. c. of glucose in Hartman's solution was given intravenously, followed by 100 c. c. of acacia in 300 c. c. of distilled water to substitute for blood while the blood matching was in progress. The pulse, which had previously been almost imperceptible for two hours, became stronger, the vaginal flow lessened and the patient was able to drink liquids by mouth and appeared slightly better. At 3:15 p. m. 500 c. c. of blood was given by the indirect method without reaction. Liver extract was started the following day by mouth and an additional 1,000 c. c. of 5 per cent glucose solution was given. The vaginal discharge was less, but she was passing large clots from time to time and a second transfusion was given on the fourth day of 500 c. c. Ergotamine tablets were used every four hours to hasten involution. On the fourth day the interior of the uterus was explored with a dull curette and placental forceps. Several large placental fragments were removed. Dr. P. G. Bowen was called in consultation. The uterus was tightly packed with gauze to control hemorrhage. She received an additional 500 c. c. of blood on the fifth day with slight reaction and the uterine packing showed signs of hemorrhage. It was removed on the sixth day. The seventh day she continued to pass large clots and the flow was entirely more than normal. She was repacked and on the eighth day another transfusion of 250 c. c. blood was given and packing removed. After repacking, the vaginal pads were soon saturated with bright red blood and she passed an additional large clot. Dr. S. Foster Moore, obstetrician, was called in consultation and reported: the patient does not appear to be acutely ill, but shows marked pallor. The abdomen is not distended. The uterus is palpable just below the umbilicus, a soft boggy mass. There is slight bilateral tenderness, no rigidity. The lacerated cervical os easily admitted one finger. Palpation of the cavity of the uterus showed it to contain numerous pieces of irregular material firmly attached to the walls of the uterus. Some of these were removed with a sponge forceps and appeared to be necrotic placental tissue. The cavity was large and profuse bleeding followed the instrumentation. There is anemia due to acute blood loss; acute endometritis; and placenta increta.

Blood transfusion, supravaginal hysterectomy, and supportive therapy are recommended.

The uterine cavity was again explored manually, large placental fragments were again removed and a diagnosis of placental increta made because there was no definite line of cleavage between placenta and uterine muscle. Hemorrhage was profuse and the uterus was again thoroughly packed with gauze. Intravenous glucose, sulfanilamide and a transfusion of 500 c. c. of blood were given. A subtotal hysterectomy was done, followed by a 500 c. c. transfusion. The patient had the usual postoperative treatment for hysterectomy, including nasal suction, fluids, morphine and stimulation, and made an uneventful recovery. She was discharged on the twenty-third hospital day as clinically well. The child was normal in every respect.

The blood picture was as follows:

Date	Hb. Per Cent	R.B.C.	W.B.C.
August 10	38	1,970,000	14,000
August 23	41	2,570,000	21,900
November 11	80	4,110,000	8,100

Blood cultures were negative.

The pathological report by Dr. A. O. Severance, of the Nix Clinical Laboratory follows:

The final pathological diagnosis was infected placenta accreta. Grossly, the specimen consists of a uterus amputated above the cervix, having previously been opened and fixed in formalin. In the open state it measures 15x12x6 cm. The wall varies from 1.5 to 3.5 cm. in thickness. The serosal surface is pinkish-gray. The endometrial cavity has a rough reddish brown surface with several elevated areas that show retained placental tissue of a darker reddish brown appearance. These areas are very irregular and on section show downgrowth of apparent placental tissue into the underlying muscle wall. This area is on the

Fig. 1

Cross section through area of placenta accreta (almost actual size). Stippled areas represent placental tissue.

Fig. 2
Chorionic villus invading muscle layer without intervening decidual cells.

anterior wall and measures 7 cm. in greatest dimension. The cut surface is gray with a few areas of brown where the attached placenta is cut. There is no gross line of separation between uterine wall and placenta.

Microscopic.—Many sections (14) of the uterus, especially at the site of the adherent portion of placenta, were taken. In one there is a good area which shows old fibrotic chorionic villi, in direct contact with the uterine muscle without any intervening decidual tissue. In other sections there is a small zone of decidua between the muscle and the chorionic villi. In places syncytial masses are found in among the muscle bundles. In many of the sections the placental tissue is necrotic with other areas of necrosis in the uterine wall and parts of endometrium. Throughout all the sections there is a heavy infiltration of polymorphonuclear leukocytes with fewer plasma cells and lymphocytes. There are huge blood spaces in the wall, some containing infected thrombi. There are scattered areas of hemorrhage.

The surface of the endometrium is necrotic, the deeper portions still contain irregularly shaped glands lined by columnar epithelial cells, and the stroma shows a heavy inflammatory cell infiltration. Some areas of the uterus as well as placenta show infarction.

There is no evidence of malignancy.

CONCLUSIONS

(1) Early recognition of this serious third stage complication and radical surgical treatment as soon as the diagnosis is firmly established are essential. The adoption of the hysterectomy method best suited to the operator and the use of blood transfusion before and after surgery are recommended.

(2) The high mortality rates in the past from this dreaded complication show a decided drop in the last ten years since the anomaly has been observed and studied more intelligently.

(3) In the case presented, even after procrastination for nine days and adopting the hazardous method, unknowingly, of partial manual extraction, followed by subtotal hysterectomy, the patient recovered.

The writer wishes to express his gratitude and appreciation to Dr. S. Foster Moore for his valuable assistance and helpful suggestions in confirming this diagnosis, and also to his consultants, Dr. R. A. Roberts, Dr. R. A. Miller, and Dr. P. G. Bowen.

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PYURIA*

ITS SIGNIFICANCE IN UPPER URINARY TRACT DISEASE

By HENRY J. LINDNER, M.D.
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Pus in the urine is probably the most frequent and one of the most important findings in upper urinary tract disease. It is a manifestation of an existing condition which may be in its infancy, but, if neglected or disregarded and permitted to progress, often proves not only a great hazard to the health of the patient, but too frequently results in irreparable renal destruction.

The source of pus in the urine may be: (1) primary, resulting in acute hematogenous infections, septic infarcts, pyelitis, pyelonephritis, tuberculosis and ureteritis; (2) secondary to obstructions from renal anomalies, renal calculi, renal tumor, ureteral stones, ureteral stricture, ureteral tumor or ureteral kinks.

It is to this second group of cases which are often characterized by an absence of noticeable symptoms, in which the urinary findings give the only clue to the source of trouble, that I desire to direct your attention.

Of no less importance than in the adult is the presence of pyuria in the child.

O. L. Addison[1] says that the most frequent cause of chronic pyuria in childhood is congenital

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Fig. 1
Intravenous pyelogram (normal) demonstrating how well upper urinary tract may be shown.

Fig. 2
Intravenous pyelogram, female, aged 17, pain in lower left quadrant. Very little dye appears in the left kidney. Kink upper right ureter.

malformation of the urinary tract. One of the best works evaluating the significance of pyuria in the young was offered by Hepler and Scott,[2] who, after carefully examining the urines of four hundred male and two hundred ninety-four female children followed up by a thorough urologic examination in those cases in which pus was found in catheterized specimens, came to the conclusion that the degree of pyuria indicates neither the kind nor severity of the urologic disease. Half of the children with demonstrable urologic disease and many with advanced lesions had a urinary pus count within what is commonly considered normal limits.

Also, Campbell,[3] in stressing the importance of pyuria in children in anomalies of the upper urinary tract, says that of presenting symptoms in anomalies of the upper urinary tract, persistent pyuria comes first. He found that in a series of five hundred eighty cases of persistent pyuria in the young, a total of two hundred six anomalies of the upper urinary tract were demonstrated in one hundred seventy-nine patients, or 30 per cent.

It is my belief that many of the nephrectomies made necessary in early adult life are the result of anomalies of the urinary tract not detected, because of the fact that full consideration is not given to the presence of pus in the urine and its attending systemic disturbances in earlier childhood.

Observations made from a series of one hundred twenty-three unselected nephrectomies from the records of the Charity Hospital at New Orleans for the past ten years show: (1) pyuria was prominently present in one hundred six cases; (2) the presence of hematuria in twenty-two cases; (3) lumbar pain, usually dull in character, present in ninety-two cases. These findings firmly establish pyuria, pain and hematuria as the cardinal symptomatic triad of upper urinary tract disease. Seventy-eight of these nephrectomies were done on the female. Fifty-seven were white and twenty-one negro.

We are impressed with the large percentage of nephrectomies in this series performed on the female. As a large majority of these were in married women who had borne children, the question arises as to just what part, if any, renal infections associated with previous pregnancies and not adequately treated following delivery, may have had in the resulting renal destruction.

Duration of Symptoms.—The period of time over which these patients presented symptoms is worthy of attention. Thirty-seven, or 30 per

Table 1

FINAL DIAGNOSIS IN WHITE AND COLORED RACES IN A SERIES OF 123 UNSELECTED NEPHRECTOMIES

	Male		Female	
	White	Colored	White	Colored
Renal stone	12	2	30	8
Ureteral stone	3		5	1
Cong. def. kidney	1			
Cortical abscess	2			
Renal infarct			1	
Ac. supp. nephritis			1	
Solitary cyst			1	
Ureteral stricture			2	1
Tuberculosis of kidney	5	1	2	3
Pyonephrosis	5	1	6●	4
Hydronephrosis	6*†	1	3	1
Ptosis of kidney			1‡	
Hypernephroma		1	1	1
Pap. carcinoma of kidney		1		
Chronic pyelonephritis			3	1
Chronic suppurative neph. (Brewer's)	1		1	
Wilms' tumor		1		
Undiagnosed		1		
Carcinoma of kidney (renal cell type)		1		
Acute and chronic neph.				1
	35	10	57	21

●Retention cyst of kidney, one case in white female.
*Ureteral kink with aberrant vessel, three cases in white males.
†Carcinoma of ureter, one case in white male.
‡Pyonephrosis, one case in white female.

cent, had symptoms more than two years, while fifty-eight, or 47 per cent, had symptoms more than one year.

One patient, a 17-year-old white girl, complained of pain in her side all of her life. Four years before she was seen by us an appendectomy was done for relief of symptoms. Another case was treated by the family physician with oral medication for eight years.

Practically all patients with symptoms over six months had sought relief on one or more oc-

Table 2

DURATION OF SYMPTOMS AS PRESENTED IN SERIES OF 123 NEPHRECTOMIES

	Cases
Days	4
1 to 4 weeks	15
1 to 7 months	24
1 to 2 years	21
2 to 5 years	15
6 to 10 years	15*
10 years and over	7†
Not stated	22

*One case treated for eight years by family physician with oral medication.

†Pain throughout life, seventeen years. Appendectomy four years earlier for relief of pain.

Fig. 3

Same case as Fig. 2. Retrograde left urogram showing kink at uretero-pelvic junction, probably due to aberrant vessel or fibrous band.

Fig. 4

Retrograde pyelogram showing kink at uretero-pelvic junction on left side with early hydronephrosis and blunting of calices.

casions. We refer to these facts without malice to any particular group, but as a plea for earlier consultation with the urologist so that a thorough urologic investigation can be made and treatment instituted at a time which may avoid months of ill health, renal destruction and perhaps shortening of life.

Age Groups.—Ninety-three of this series of one hundred twenty-three nephrectomies were performed on patients in the third, fourth and fifth decades. The largest number, forty-two, occurred in the fourth decade. There were three cases in the first and fourteen cases in the second decades.

Table 3

AGE GROUP OF CASES IN THIS SERIES

Ages	Cases
1 to 10	3
11 to 20	14
21 to 30	28
31 to 40	42
41 to 50	23
51 to 60	10
61 to 70	3

It is hoped that the tabulations from this series of cases have firmly impressed you with the diagnostic importance of pus in the urine.

Remember that gastro-intestinal and other systemic symptoms, especially in children, may, if one is not alert, direct one's attention away from the urinary tract.

CONCLUSION

The sooner cases of pyuria are referred to the urologist for examination, the more satisfactory will be the results both for the patient and physician.

The continuous use of urinary antiseptics in persistent or recurrent pyurias cannot be too severely condemned.

All cases which fail to respond to the usual methods of treatment within a reasonable time, two to four weeks, should be subjected to cystoscopy and complete urologic study.

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DISCUSSION (*Abstract*)

Dr. Jarratt P. Robertson, Birmingham, Ala.—Pyuria of some degree is a constant finding in the majority of pathologic lesions of the urogenital tract. In spite of our present effective urinary antiseptics, infections of the upper urinary tract remain one of the major urologic problems. Therefore, pus in the urine is of great diagnostic and clinical significance and should not be ignored.

The pyuria may be due to lesions of the upper or lower urinary tract. Dr. Lindner's paper deals particularly with pyuria that is renal in origin. By the simple process of catheterization in the female, and the three-glass test in the male, infections of the upper and lower urinary tract can usually be separated. The general practitioner is all too prone to examine only a voided specimen of urine in the female and to become greatly alarmed over the finding of pus that may be due to vaginal contamination. The examination of a voided specimen of urine for pus and bacteria in the female is a waste of time of all concerned. Helper and Scott found pus in the voided centrifuged urine of 99 per cent of 694 children and 36 per cent of the uncentrifuged specimens. When the same children were catheterized, pus was found in only 13 per cent of the centrifuged specimens and in 9 per cent of the uncentrifuged specimens.

Pus in the catheterized specimen of urine indicates inflammation. The inflammatory process will always be in the urinary tract except where an extra-urogenital abscess has ruptured into some urinary organ. Frequently the inflammatory process is secondary to some other lesion, particularly calculi, neoplasms, and conditions producing a stasis or obstruction to the outflow of urine. Since the pus results from an inflammatory process, it will usually be accompanied by the causative organism. In urogenital tuberculosis, frequently it is hard to demonstrate the bacilli. Pyuria without bacteria suggests tuberculosis.

Pyuria unaccompanied by neoplasm, calculus, urinary stasis or tuberculosis, with a fair kidney function, will usually respond to sulfanilamide and mandelic acid therapy. The causative organism must be known before the proper therapy can be prescribed. Where the pyuria persists despite three to five weeks of intensive appropriate medical therapy, a complete urologic examination is indicated, because in this group there will usually be found a lesion of major importance to which pyuria is secondary. Here, not the pyuria, but the primary lesion is of major importance, and only by early and complete urologic investigation in persistent and recurrent pyuria can these lesions be discovered in time to prevent major surgical operations at a later date. There is not the slightest doubt that an early and thorough study of the 123 nephrectomies reported by Dr. Lindner would have revealed pathologic conditions that could have been controlled by cystoscopic and medical therapy. If lesions are permitted to advance until irreparable renal damage occurs, nephrectomy offers the only hope of improvement. The physician does not render his patient adequate treatment unless he insists upon a thorough investigation of the

urinary tract in those cases where the pyuria persists following adequate medical therapy.

The degree of pyuria does not of necessity indicate the type or amount of renal damage. I have recently seen two patients with stag-horn calculi, whose only symptoms were a slight frequency and a moderate pyuria. Patients with pyuria should not be dismissed without a complete urologic examination. All recurrent cases of pyuria should have a complete urologic investigation.

Particularly do I wish to stress the importance of thorough and complete examination of the urinary tract in children with persistent pyuria. Countless children go to a preadolescent grave or lead a life of semi-invalidism because in early childhood urinary symptoms were permitted to pass without a complete urologic examination. Those who supervise the health of the children should remember that a cystoscopic examination in the young is practical, and it is indicated in urinary tract infections where pyuria persists following three to five weeks of adequate medical treatment; in recurrent cases of urinary tract infections; in suspected tuberculosis, calculi, masses, cysts, and neoplasms of the urinary tract; in nocturia not due to habit, and certain congenital obstructive lesions. Children with marked pyuria due to renal deformity and obstruction can have their urines rendered sterile with our present urinary antiseptics despite the deformity.

I agree with Dr. Lindner in condemning the prolonged use of urinary antiseptics in persistent and recurrent pyuria. If improvement does not occur in from three to five weeks, cystoscopy and pyelography are indicated. Early cystoscopic investigation in these cases becomes conservative and not radical treatment, because it may prevent future major operations or the loss of a kidney.

It is important that the urinary tract be rendered sterile where possible in all cases that have had calculi. Sterilization of the urinary tract is of major importance in preventing the recurrence of calculi. Frequently, cystoscopic dilatations and plastic surgery are required to secure a sterile urine. The present effective urinary antiseptics can render sterile an infected urinary tract in the face of obstruction and stasis. Today it is essential that the investigation of the urinary tract be complete to prevent future renal damage from back pressure and dilatation, where obstruction persists following sterilization of the urinary tract.

Dr. Grady W. Reagan, Little Rock, Ark.—Dr. Lindner's point that it is the unusual conditions or malformations that cause most of the chronic genito-urinary diseases is something that cannot be stressed too much. All patients who have pyuria for as long as a few weeks at a time should certainly have a complete urologic study. Many kidneys could be saved if patients were studied in time and proper treatment instituted. The pyuria of children practically always means genito-urinary malformations.

In a recurrent pyuria where no definite malformations or pathologic conditions are found, we should search for foci of infection.

THE TREATMENT AND PREVENTION OF DEAFNESS IN CHILDREN*

By JOHN E. BORDLEY, M.D.
Baltimore, Maryland

More than 50 per cent of the deafness which develops before puberty may be prevented from reaching a very severe degree or may be prevented altogether. The difficulty lies in the early recognition of hearing impairment in children and in the early discovery of the predisposing factors to deafness.

It is generally believed that the most common form of hearing difficulty in children is "conductive deafness" (that is, low tone loss with bone conduction greater than air conduction). This probably is the result of the present day method employed in testing individuals to determine hearing impairment. Loss of hearing acuity is usually discovered in children by the use of the phonograph audiometer employed in mass testing in schools or by the parents themselves when the child has reached a degree of hearing impairment which will no longer admit him to the family's dinner table discussions. When this point has been reached, frequently it is too late for the otologist to have much chance to restore the lost function.

In a recently published investigation by Dr. Crowe and Dr. Baylor,[1] from the Otological Laboratory of the Johns Hopkins Hospital, it has been shown how partial obstruction of the eustachian tube in children may cause an early retraction of the pars flaccida of the tympanic membrane. This will shortly thereafter be followed by impairment for the tones ranging between eight and sixteen thousand double vibrations. Bone conduction as tested with a 512 fork in these cases usually shows no change, but occasionally it is reduced. As these patients were observed month after month it was found that the impairment began to spread from the extreme high tones into the lower ranges, octave after octave, until the audiogram showed all low tones diminished. While this change was taking place in the hearing it was also observed that the retraction of the pars flaccida was gradually

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*From the Otological Research Laboratory, the Johns Hopkins University School of Medicine.

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extending into the anterior quadrant and eventually involved the whole tympanic membrane. In many cases mucus could be seen behind the membrane and in most instances the membrane itself became thicker and more opaque. Eventually as the ossicles became involved in mesenchymal hyperplasia or scar tissue the picture became one of typical conductive deafness.[2]

The question arises as to the cause of this partial eustachian obstruction. Everyone who has examined children has observed large obstructive masses of lymphoid tissue filling the nasopharynx, completely blocking the eustachian tubes and causing hearing impairment. This is the classical picture of eustachian obstruction. Another type of eustachian obstruction is much less easily discovered and probably occurs more frequently and certainly the end results can be just as serious. This group which is now under intensive study at the Johns Hopkins Hospital is the result of partial or intermittent chronic obstruction to the eustachian tubes. It is caused by the presence of very small adenoid masses involving the eustachian orifices or up in the eustachian tubes themselves. Such a picture can be recognized only by most careful study, which includes examination of the eustachian orifices and nasopharynx, close study of the tympanic membrane, noting the position of the pars flaccida as well as the pars tensa, and careful examination of the hearing. We believe that these examinations can best be carried out by the use of a nasopharyngoscope, a magnifying otoscope and an audiometer which includes ranges at least up through 10,000 and if possible through 16,000 for air conduction. Bone conduction tests should be made from 512 double vibrations through 10,000 with a bone conduction receiver. All hearing tests should be cross-checked by the use of masking in the opposite ear and by the ordinary fork tests. Eustachian obstruction may also occur as the result of protein sensitivity, low grade chronic sinus infection and operative trauma to the eustachian orifices, which results in stricture.

As for the treatment of the above conditions, let us consider the best methods to follow. In cases of allergy, the early discovery of the causative agent and its removal or desensitization to it is undoubtedly the best procedure. In chronic sinus infection, conservative treatment or surgery must be resorted to. In postoperative stricture, gentle dilatation with a soft cotton tipped Yankauer applicator is still the most satisfactory treatment. Too much care, however, cannot be taken, especially in small children, where in many cases it is safe to attempt such manipulations only under a general anesthetic. The necessity for the removal of large obstructing adenoid masses is obvious.

The early high tone type of impairment in children resulting from small hypertrophied lymphoid masses is the group, which, due to the insidious onset, the importance of its early diagnosis, and the problem presented of its proper treatment is now to be considered in detail. This composes a very large percentage of the total number of children with hearing impairment. In general it can first be recognized in the age group of between 5 and 10 years. At least half of them have had adenoidectomies. Very few of them are conscious of any hearing difficulty. On examination they have a characteristic tonal impairment between eight and ten thousand d. v., frequently extending down through 512 d. v. Bone conduction may be normal, but it is occasionally very much impaired. Their tympanic membranes show very little change aside from injection, some increased thickening and retraction of Sharpnell's region. Examination of the nasopharynx reveals small masses of hypertrophied lympoid tissue growing up around the eustachian orifices, sometimes even completely hiding the tubal openings. The posterior wall of the nasopharynx is frequently covered with small lymphoid follicles, such as are seen in the pharynx in follicular pharyngitis. In many cases the pharynx and the tonsils may appear normal as the lymphoid hyperplasia may be localized in the nasopharynx. Surgery in these cases is of very little use, because the injurious lymphoid tissue lies under the protecting eustachian prominence and in many cases (as have been shown in some as yet unpublished studies of serial sections of the eustachian tube by Dr. Polvogt and Dr. Babb in the Otological Laboratory) lymphoid nodules are present far up in the eustachian tube itself (*Fig. 1*). Dilatation of the tube in these cases is of no value because it cannot remove the causative agent. It also has a tendency to spread infection up the tube from the nasopharynx. Sclerosing material is dangerous, due to its tendency to scar formation.

Heineke,[3] at the University of Leipzig, in 1905 made the observation that lymphoid tissue is more susceptible to irradiation than are most tissues, such as epithelium, muscle, bone, pituitary gland or the central nervous system. It was this observation that led to the development of the technic for local irradiation, which is now used in the treatment of the very large group

of children under observation at the Johns Hopkins Hospital. An applicator was developed especially for this work by Dr. Curtis F. Burnam, of the Howard A. Kelly Hospital in Baltimore, who has cooperated with the Otological Laboratory and has supervised all of its irradiation therapy since its organization. This applicator (*Fig. 2*) is about the size and shape of a nasopharyngoscope. Its detachable tip contains a glass tube filled with radon, screened by brass. Its strength when first made up is between 500 and 800 millicuries. It loses about one-sixth of its strength every twenty-four hours, so it is necessary to remove the container once or twice a week for recharging. Between 1.8 and 2 gram minutes of irradiation are administered to the areas to be treated in each application. In other words, it is safe to administer two gram minutes to the region of the orifice of each eustachian tube at one time. This irradiation should never be undertaken within two weeks of an acute infection and should never be repeated within a period of six weeks. In many cases it has been found necessary to repeat the treatment once or twice a year until puberty, at which time it has been found that the tendency toward lymphoid hyperplasia becomes much less active or stops entirely. The applicator is passed through the nose and placed in position after careful measurements of the area to be irradiated have first been made through the nasopharyngoscope with a cotton tipped applicator in the opposite nostril for a guide. In order to carry out this type of treatment successfully it has been found necessary to examine these children routinely at least twice a year over a period of at least two years or longer if necessary.

Fig. 1

Photomicrograph showing nodule of lymphoid tissue in mucosa of eustachian tube, near the junction of the cartilaginous and osseous portion.

Careful analysis of the treatment records of forty-six children who have been under observation for periods up to eight years shows definite improvement in hearing in 63 per cent. In most cases the improvement is bilateral. Many of those were of long standing and had marked impairment with losses for the low as well as the high tones. In some cases, after an initial improvement, the hearing went down following an upper respiratory infection, only to improve again after another irradiation. Several of these cases have been chosen to illustrate the types of results obtained.

Case 1.—R. B., a boy, aged 8, was first examined at the Johns Hopkins Hospital in September, 1934. His complaint was progressive loss of hearing. Examination showed approximately 25 per cent loss of hearing. He gave a history of having had a tonsillectomy and adenoidectomy at the age of 3, followed by a bilateral acute otitis. Three years later his tonsils and adenoids had again been removed because of deafness, recurring colds and unexplained fever. His hearing had improved following his second operation and for a year he was well, but his hearing again became impaired in 1933 following measles, although he had no acute otitis at the time of his measles. Physical examination revealed a diffuse nodular hyperplasia of lymphoid tissue in the nasopharynx which extended to the lateral as well as the posterior pharyngeal walls. The orifices of both eustachian tubes were overgrown with this tissue. There was some hypertrophied lymphoid tissue at the base

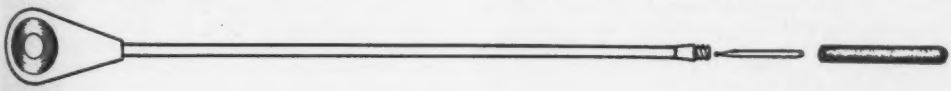

Fig. 2

Radium applicator for treatment of lymphoid tissue in nasopharynx (almost actual size). The glass capillary containing the radon is shown between the metal handle and the hollow brass container which has an internal threading to fit that on the handle. The wall of the brass tube is 1.0 mm. thick.

of the tongue. The drums were retracted. The lymphoid tissue was removed from the nasopharynx and the base of the tongue under general anesthesia.

In April, 1936, a second examination was made, at which time the child's general physical condition had improved. The lymphoid hyperplasia in the pharynx and at the base of the tongue had not recurred, but the nasopharynx had the same appearance as on the first examination. The tympanic membranes were still both retracted. Tuning fork tests indicated a middle ear lesion with excellent bone conduction. The audiogram test showed a definite impairment for air conduction in both ears. With a radon applicator he was given 2 gram minutes irradiation to each side of the nasopharynx. Six months later examination revealed that the pharyngeal orifices of the tubes were more normal than on any previous examination. His hearing was so much improved that air conduction was heard better than bone conduction in his tuning fork tests. Following a cold several weeks later there was some recurrence of the lymphoid tissue around the tubal orifices and in July, 1937, his hearing was more impaired on the right side. A second radon treatment of 2 gram minutes was given on each side. Three weeks after this the patient developed an acute otitis media on the right, which possibly was the result of a flaw in our technic of application. Since that time the patient's hearing has steadily improved, although he has had no further treatment.

Now at the age of 12 the pharyngeal orifices of his eustachian tubes are normal. Hearing is so nearly normal on both sides that he is having absolutely no difficulty in school.

Case 2.—J. H., a boy, aged 11, was seen first in June, 1938, at which time the audiograms showed a very marked impairment for air conduction in both ears. He was unable to hear a 512 d. v. steel fork at maximum intensity over either mastoid. He gave a history of having had increasing deafness for several years previous to his examination. His hearing had become so poor that during the past year the school authorities had transferred him to a class for handicapped children, where he was being taught lip reading. He had had his tonsils and adenoids removed in 1937, but his hearing had only become worse. On examination in June, 1938, it was found that his tonsils had been partially removed, the pharyngeal orifices were completely obscured by a mass of lymphoid tissue, the tympanic membranes were intact, but very much retracted and to ordinary conversation he was almost totally deaf. The observations on his hearing were typical of a severe inner ear deafness.

Under a general anesthesia the remaining portion of the tonsils and adenoid tissue was removed, together with some hypertrophied nodules from the posterior and lateral walls of the pharynx. This was followed by irradiation equivalent to 2.2 gram minutes around the pharyngeal end of the eustachian orifices. Within a week after his irradiation his hearing began to improve. When a second audiogram was made eighteen days after the first test, his hearing was found to be very much improved and practically normal for bone conduction. Five months after the operation and irradiation another test was made which you can see showed a tremendous improvement for both ears. The child had been put back into his class of normal children and was doing very good work. It is interesting that at the first examination he did not hear the higher tones even at maximum intensity and heard nothing by bone conduction. The improvement shown in the second audiogram has been maintained.

In conclusion, it should be emphasized that children of early school age should have very careful examination of their hearing, as well as a general physical examination, if preventable hearing impairment is to be controlled. Otoscopic, nasopharyngoscopic and audiometric examinations should be made. The high tones especially should be tested. The immediate eradication of infected lymphoid tissue should be undertaken whenever it is found involving the eustachian tubes. Allergic manifestations should be corrected. A simple tonsillectomy and adenoidectomy are often not enough and should not be done unless definitely indicated, because in many cases it does not remove the causative agent. These measures, combined with careful treatment of acute infections of the middle ear and the mastoid with such drugs as sulfanilamide and sulfapyridine, combined when necessary with conservative surgical measures, offer untold possibilities for the prevention of deafness in later life. All children with any signs of impairment of their hearing should have periodic check-ups.

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DISCUSSION (*Abstract*)

Dr. Albert L. Bass, Louisville, Ky.—The old adage, "an ounce of prevention is worth a pound of cure," may very well apply to the subject under discussion. The fact that we have not nearly so much deafness and chronic middle ear trouble to contend with today as we had several years ago speaks well for scientific advance in medicine and surgery. Of course, the ideal is to prevent a condition rather than cure; but since ours is not an exact science, it behooves us to make it as perfect as possible. We should at all times keep the idea of prevention uppermost in our minds. Much adult deafness dates its beginning back to childhood and the earlier the etiologic fact or factors are recognized and treated the better the results.

The most frequent cause is blocking of the eustachian tube with lymphoid tissue, aggravated by frequent infection which increases the hypertrophy with each subsequent infection unless remedied. If low grade in nature it is insidious in its onset and the parent may be the first to notice that the child does not hear well. Examination of the child may show one of several things: adenitis anterior or post-cervical, which is indicative of absorption from tonsils and adenoids; congestion of the nasal mucosa and the size and appearance of ton-

sils and adenoids. Transillumination of the sinuses and x-ray may be indicated. The appearance of the drum will be a dull gray; retraction of Shrapnell's membrane may occur if there is partial or temporary obstruction of the eustachian tube. If the tube is completely obstructed, there is congestion of the middle ear, accumulation of mucus, and there may be a bulging of the drum. If this condition continues for some time, fibrous tissue forms and in turn there is retraction of the anterior part of the drum and subsequently the entire drum, interfering with the function of the ossicular chain.

The thought has occurred to me more than once in seeing some of the deafness in adults with sclerotic mastoids shown with the x-ray, dating back to childhood, with a history of never having had any middle ear disease, that this condition may be due to accumulation of secretion in the middle ear *in utero*, producing a reaction with subsequent fibrosis. This thought was prompted by the work done by Wittmaack.

I wish to stress the importance of being on the alert to discover and correct allergic manifestations.

Many cases clear up very readily after removal of the tonsils and adenoids, desensitization treatment and dietary correction. A warmer climate in the winter time will help. I wish to go on record against too early removal of tonsils and adenoids, say, under three or four years of age. Unless there is sufficient evidence as mentioned above, leave them alone. They act as forts in early life to ward off general systemic invasion and give the body a chance to build up an immunity. As we all know, the lymphoid tissue is more abundant in childhood than after puberty. We have noticed in children after early removal of tonsils and adenoids the recurrence of compensating lymphoid tissue in the pharynx. It becomes more noticeable with frequent infections. The mucous membrane in the post-pharyngeal space is a loose connecting tissue richly supplied with blood vessels, which becomes much enlarged with infection and recedes when the infection subsides.

In testing out the hearing I have been content with using the 128 and 512 forks and find this compares favorably with the audiometer findings which we have been using for the last two or three years.

As for treatment, it is important when indicated to do a thorough tonsillectomy and adenoidectomy. Having removed the tonsils and central portion of the main bulk of adenoid, I lift up the soft palate with the retractor and with the Beck adenotone remove the lymphoid tissue at the junction of the posterior and lateral pharyngeal wall. This is important, as it does not leave lymphoid tissue around the eustachian tube orifice.

I have been treating these cases as described by Dr. Bordley with local applications of cocaine solution to the mouth of the eustachian tube, followed by 2 per cent silver nitrate, plus mild catheterization in some cases, and the use of mild mercury or silver antiseptic drops.

These children are advised to return when they have an acute infection in the nasopharynx so that we may help them recover as soon as possible.

I shall not hesitate to recommend irradiation of lymphoid tissue when it is indicated. I have used it successfully in a few cases in adults with chronic pharyngitis, but hesitated in children, fearing there would be more harm done than good.

Dr. William D. Stinson, Memphis, Tenn.—A word of caution is in order on this paper. Dr. Bordley has called attention to a distinct clinical entity and laid down some very definite rules. He said specifically that surgery in most of these cases is not indicated, that is, repeated surgery. Years ago attention was called to obstruction of the eustachian tubes as a cause of deafness. Then followed an era of repeated scraping of the nasopharynx, submucous resections, and the rape of the turbinates, with mutilation of the sinuses. This is obstruction of the eustachian tubes only, not obstruction of the anterior nares, so I think we should be merciful to the patient and use some common sense in choosing our patient and in choosing our procedure.

Dr. Arthur M. Alden, St. Louis, Mo.—In the last three years it has been my privilege to examine several hundred children culled out of the schools of St. Louis County because of a handicap of deafness. These children came through the Deafness Prevention Clinic of the Central Institute for the Deaf in St. Louis. They were carefully examined by audiograms, using both bone and air conduction, and then referred to some of us for examination as to the cause of this condition.

Naturally, there were a great many causes, but one factor I should like to stress. Many of the children had had tonsillectomy and adenoidectomy. In a large percentage of them the tonsillectomy was beautifully done; there was hardly a remnant of lymphoid tissue left in the tonsillar fossa, and yet in a large majority of those same cases there was a large amount of lymphoid tissue left in the nasopharynx.

We, as rhinologists or laryngologists, are many times to blame for some of the deafness that exists in children because we do a meticulous tonsillectomy, knowing that whoever looks at that is going to say, "Who did that?" and, if it is not pretty good, we are going to come in for some criticism; but we do not so carefully examine the nasal pharynx. I am merely making a plea for the same meticulous care in the operation of adenoidectomy that we exercise in removing the tonsils.

It is manifestly impossible to remove all of the lymphoid tissue on the lateral pharyngeal wall in Rosenmüller's fossa. If we did it with a stiff instrument, we should take the chance of destroying or damaging the cartilaginous nasal end of the eustachian tube. But for many years it has been our practice, as it has been the practice of many of you, to finish every adenoidectomy with a couple of layers of gauze over our finger, carefully scrubbing out these lateral pharyngeal fossae. That has helped a great deal, because we have carefully examined our children afterwards by means of a nasopharyngoscope.

I wish that all of us, instead of giving a "swipe" into the nasopharynx with a curette or LaForce instrument and calling it a day so far as the adenoids go, would carefully, after we get through, lift up the soft palate with a palate retractor, examine the nasopharynx, and then use a little more care in the removal of the lymphoid tissue which is frequently the cause of deafness in children.

Dr. John H. Foster, Houston, Tex.—I want to ask Dr. Bordley whether he has consulted with the radiologists as to the possibility of administering a dose of radiation with x-ray comparable to that which he uses with radium. That would be much more practical to put in universal application than the use of radium or radon applicators.

Dr. W. Likely Simpson, Memphis, Tenn.—I should like to suggest that the application of radium be made as easily as possible. I was just wondering if the radium needles which are available in any medical center could be applied to the nasopharynx to give the effect that is gotten by Dr. Bordley.

Dr. William Neill, Jr., Baltimore, Md.—The treatment of this type of deafness, up to the present time, has left much to be desired. Dr. Samuel J. Crowe, of the Johns Hopkins Hospital, has been one of the foremost investigators in the world in this field. A number of years ago, fourteen to be precise, he consulted Dr. Curtis F. Burnam, of the Kelly Clinic, with regard to devising methods of radiating the nasopharynx. Dr. Burnam perfected the nasal applicator, dosage and screening which we are employing at present. This was only after devising a number of different applicators. Finally, on account of its simplicity and ease of introduction, the instrument just described by Dr. Bordley was decided upon and has since been used extensively by Dr. Crowe and his staff. Nasopharyngoscopic examination of children with high-tone impairment of hearing who fail to improve after the tonsils and nasopharyngeal adenoid tissue had been removed by operation often shows an overgrowth of lymphoid tissue in and around the orifices of the eustachian tubes. As a rule, if this is untreated deafness progresses. The location of this tissue makes its surgical removal impossible without some risk of damage to the tubal orifices themselves. By radon radiation this tissue can be either entirely destroyed or reduced in size and held in abeyance, preventing its further overgrowth. Except in unruly children, the treatment can be readily carried out without anesthesia, the dosage being approximately 34 millicurie hours or, if you prefer, 1,000 millicuries for 2 minutes. The instrument is small enough readily to pass through the floor of the nostril to the region of the eustachian orifice, with no pain and very little discomfort. It can be repeated after an interval of one month and rarely are more than three such treatments necessary. It is actually a spot treatment to the lymphoid tissue itself, the dosage being too small to cause any deleterious effect whatever on the surrounding or adjacent normal tissues. Rarely has any noticeable reaction occurred and we have never encountered any normal tissue damage. The actual application, by employing a large amount of radon, is completed in a few minutes; on the other hand, when smaller amounts are used, the duration must necessarily be longer, making the treatment objectionable to the patient with resulting lack of cooperation It has been found by experience that adults and older persons, who are hard of hearing, are not benefited to the same degree as patients under 15 years of age, as the hyperplastic lymphoid tissue causing partial tubal obstruction usually dates from childhood and the secondary changes in the middle ear may be so advanced that no improvement follows any form of treatment.

Dr. Bordley (closing).—We agree strongly with the suggestion that tonsils and adenoids may be removed too early. Frequently the removal of the tonsils and adenoids themselves does not remove the causative factor or predisposing factor and even seems to stimulate lymphoid hyperplasia in the nasopharynx. It is lymphoid hyperplasia in the nasopharynx and the tubal orifices that we are fighting. As yet we do not know the causative factor for hyperplasia. We are trying to find it out now, but so far we have no satisfactory leads. We know that it happens and that is all. Our statistics through last week showed that over 70 per cent of our children had had previous operations.

Dr. Alden suggested that in the children he had examined the tonsils had been well removed and that the adenoidectomies had not been things of beauty. Is that because of the operation? In many cases I do not think so. I remember a case in our clinic, the child of a physician, who was suffering from just what we have been talking about. The child had his adenoids removed five times before he was finally radiated. Three different men in our department operated upon him and following each operation nasopharyngoscopic examination revealed a large recurrence of lymphoid hyperplasia in the nasopharynx within a period of three weeks. After radiation the child's hearing returned, he is now perfectly normal and the nasopharynx looks normal.

We have been using x-ray in a number of children, trying to compare it with the use of radon. So far we do not think it is as satisfactory. However, we feel that if it is developed sufficiently it may well do a great deal towards solving the problem of those persons who are not so fortunately situated as some of us where we have a ready supply of radon.

Eventually we may have to develop a method that can take the place of radon, or a method of making radon available for wider use. Therefore I do not think we should give up the thought of x-ray therapy, as in the end it may prove the solution of our problem.

I should like to say in conclusion that we feel that by combining careful operative removal of masses of obstructing tissue with careful treatment of acute infections of the middle ear and the mastoid by such drugs as sulfanilamide and sulfapyridine, combined when necessary with conservative surgical measures, we have before us really untold possibilities for the control of deafness in future generations.

CATARACT ATTRIBUTABLE TO THE USE OF DINITROPHENOL*

By ADOLPH O. PFINGST, M.D.
Louisville, Kentucky

It is of interest to note that in recent years numerous cases of cataract have been reported in which the induction could be directly associated with the ingestion of dinitrophenol as a reducing agent in obesity. The cases are now so frequent that we no longer consider them a rarity.

The interest in the administration of dinitrophenol in this country apparently dates back to 1933 when Tainter, Stockton and Cutting reported to the Section on Pharmacy of the American Medical Association their clinical observation of a large number of cases in which the drug

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had been administered for the reduction of weight in obesity.

Dinitrophenol or alphadinitrophenol has been described as a yellowish soluble powder, closely related chemically to picric acid (trinitrophenol). It is administered in amount of about a half gram in twenty-four hours, one 3 gr. pill three times daily now representing the popular method of administration. The drug has been made accessible to the lay public by pharmaceutical houses which, under various captions ("slendrets," "reducoles," et cetera), have placed on the market upward of fifteen proprietary nostrums.

Chemical analysis of these preparations has not always revealed the presence of the suspected chemical. A case in point was reported by Drs. Barkan and Beltman[1] in which a woman of 23 years developed cataracts in both eyes after having taken an advertised fat reducing preparation. The medicine was subjected to chemical analysis by expert chemists, who failed to demonstrate the presence of dinitrophenol.

Although the efficiency of dinitrophenol administered for the reduction of weight in obesity, even without limiting the intake of food, has definitely been established, it has also been observed, and not infrequently, that its administration may be attended by various untoward complications. The potent chemical seems to stimulate cellular activity, with coincident body oxidation and dehydration, and to increase the metabolic rate and thus bring about the associated tachycardia and disturbed respiration. Its toxicity is frequently manifested in gastric irritability, peripheral neuritis, disseminated dermatitis and a general physical and nervous upset. Quite a few fatalities due to functional damage to the liver, heart and muscles have also occurred.

In the last four or five years cases have been observed with increasing frequency in which a deleterious effect of the drug upon the crystalline lens of the eye has resulted in the development of cataract and coincident loss of vision. An example of the kind which has just recently come under our observation may be of interest.

It occurred in a young woman, aged 26, referred February 15, 1938, by Dr. Glen Spurling, who had been consulted on the suspicion of an intracranial affection. With the exception of an alarming increase in weight, resulting in a gain of 100 pounds in three years, the patient gave an irrelevant history up to the last three or four weeks. However, in that short time she had become conscious of a gradual diminution of vision in both eyes and inability to read even large type. She had been having some upset in her alimentary tract, a tendency to nausea and a general physical and mental let down. At this time the employment of a reducing medicine was overlooked. Dr. Spurling reported negative neurologic findings; urine and blood sugar normal; Wassermann and Kahn tests negative.

At our first examination, which was made at the infirmary, the patient could readily distinguish objects about the room, but was able to read only headlines in the newspaper. No pathologic condition was found in either eye. A few days later when a functional examination was made at the office, vision without correcting glasses in the right eye was 20/30, with little or no improvement. Vision in the left eye was only 20/100, but could be brought to 20/30 with glasses. She had developed a manifest hypermetropia of 1.50 D. She could read ordinary print only by adding +3.00 Ds. Visual fields were wide; there were no scotomata; esophoria was 5°; intra-ocular tension was normal (MacLean 30°); retinae and nerves were normal in appearance. Numerous scattered punctate or dust-like opacities were visible inside the anterior lens capsule of both lenses and some, of greater lustre, were noted on the inside of the posterior capsule. In the lens cortex a few fine spicular opacities were visible. Diagnosis of incipient cataract of unknown cause was made.

By March 9 the opacities were more pronounced and vision with strong convex lenses was only 20/40 in each eye. It was not until then that the thought of an association of the cataract formation with the ingestion of dinitrophenol occurred to us. Upon inquiry we learned that the patient had been taking 3 grams of the drug three times daily over a long period, until she had consumed 400 pills. The drug was immediately discontinued and the patient placed on cevitamic acid. As the patient had a long distance to come to our office, she was not seen again until April 15, when we found little or no increase in the lens changes. However, I would mention as an interesting feature the presence of considerable manifest hypermetropia, R. 3.75 D., L. 4.50 D. Vision with this correction was 20/30 in the right and 20/20-3 in the left eye. Accommodation seemed to be very limited, as it took an addition of +2.00 D. for her to read ordinary print. No change in treatment was suggested. However, she was given glasses to improve her vision. Surgical treatment was discouraged. At the last examination, in September, 1939, the patient's condition remained unchanged. The wearing of glasses had added much to her comfort.

This case evidently represents an example of dinitrophenol cataract. Its special features of interest were the development of high degree hypermetropia which had apparently emphasized the amblyopia in her case, and the apparent arrest of the cataract development after discontinuing the use of dinitrophenol.

While accurate figures as to the frequency of cataract formation due to the administration of dinitrophenol are not available, a compilation of 100 such cases several years ago would suggest that by now upward of 200 cases must have occurred. Naturally this would represent a low incidence when we take in account the many who have taken internal treatment for obesity. The incidence of cataract formation in those having taken the drug has been placed at 0.1 per cent of cases.

The amount of the chemical taken varied considerably, one case having been recorded in which cataract occurred after the patient had taken only 31 grams. On the other hand, there have been instances in which lens changes did not occur until several months after treatment had been discontinued. Both lenses are nearly always involved. As one would naturally infer, all of the recorded cases occurred at an earlier period of life than that in which senile cataract is observed. With but one or two exceptions the complication befell the female sex, which may readily be accounted for from the fact that obesity treatment is employed very much more frequently by women than by men. In all of the recorded cases no etiological factors other than the ingestion of a toxic agent were reported.

The changes found in the lenses were rather uniform, the stippled opacities under the lens capsule preceding the changes in the cortex. In most instances cortical changes when once they began progressed rather rapidly, the lenses finally becoming entirely opaque. Spaeth[2] reported an instance in which complete liquefaction of the cortex occurred in fifteen months after three ounces of dinitrophenol had been taken.

An interesting and rather frequent feature of these cases is the development of a progressive hypermetropia which has been attributed to a drying and consequent loss of elasticity of the lens. This is contrary to what occurs in senile cataract, in which the eyes usually become myopic.

At present no hypothesis has been accepted to explain definitely the manner in which dinitrophenol brings about the changes in the lens. The most plausible theory ascribes the eye condition to dehydration of the lens fibers, occurring coincidentally to the general dehydration of tissue observed in administering dinitrophenol.

Some observers have maintained that the chemical increases the permeability of the lens capsule, thus allowing fluid to penetrate and bring about lens changes. This theory has been controverted by W. E. Borley and M. L. Tainter[3] who demonstrated experimentally that even direct application of the chemical to the lens capsule does not alter its permeability.

Clyde McDannald,[4] who observed a case of cataract attributable to dinitrophenol in which scattered areas of atrophy of the pigmentary layer of the uvea were noted, concluded that toxic matter emanates from these rarefied areas and causes changes in the lens.

The very interesting observation has been made that all of the cases of cataract attributed to dinitrophenol have occurred in the United States. This is rather significant and has been accounted for by Dally[5] in the probability of the presence of an impurity in the American drug in the form of dinitronaphthol.

Discontinuance of the etiological factor and therapeutic treatment instituted after ocular changes have begun have been of little or no avail in the recorded cases, thus necessitating surgical removal of the lenses after vision is disturbed beyond the stage of usefulness. Ocular surgeons who have operated dinitrophenol cataracts speak of the relative ease with which such lenses can be removed and of the uniformly good surgical and optical results.

In closing I would emphasize the opinion expressed by others that the treatment of a minor affection with a drug whose administration is beset with the serious danger of causing blindness or even death should not be encouraged. In fact, it would seem that until its toxic action can be nullified by a modified means of administration the use of dinitrophenol by the profession should be prohibited. The still greater danger incident to the use of proprietary nostrums containing dinitrophenol on the part of the lay public is self-evident.

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EPIDEMIC DIARRHEA OF THE NEWBORN*

By THOMAS G. FOLSOM, M.D.
and
GEORGE M. LYON, M.D.
Huntington, West Virginia

An epidemic of diarrhea of the newborn was observed in a general hospital in Huntington, West Virginia, during August, 1938. The outstanding features will be described.

The findings in this epidemic differed decidedly from those encountered in bacillary dysentery as usually seen in the newborn. In the latter, the onset generally occurs some time after the first seven days, seldom earlier, and the clinical manifestations have, as a rule, been most in evidence ten to twenty days after birth. The usual history has been that the infant passed a few loose stools, perhaps with blood and pus, during the 24 to 72 hours just previous to leaving the hospital, and presented no other evidence of illness. Most generally the active clinical course was observed after the baby had left the hospital. This is in striking contrast to the earlier age of attack, the greater severity and the higher morbidity and mortality rate of epidemic diarrhea of the newborn as generally described.

We have no satisfactory explanation of the etiology of epidemic diarrhea of the newborn. Indeed, its clinical manifestations are not clearly defined as yet. It has been suggested that there are probably several different causative factors, and that this may account for the considerable difference in the severity and clinical characteristics reported in the epidemics which have been described in the literature.

Because this epidemic of diarrhea in the newborn occurred at a time when there was within the community an unusual prevalence of so-called "acute epidemic influenza," the question arose as to whether there might be a causal relationship. On investigating the possibilities of human contacts who had gastro-intestinal infections which might have been of significance in the situation, our results were entirely of a negative nature. When it came to considering infections or disorders other than those of the gastro-intestinal tract, it was not a simple matter. Eight of the twenty-five mothers lying-in during the period of this epidemic at some time during their stay in the hospital had temperatures in excess of 100° F. Various explanations were given as to the cause.

The mother of the first newborn to be attacked was ill with a respiratory tract infection for from 7 to 10 days preceding her admission to the hospital. She was said to have had "flu." She came from her home in the country to the city in labor, and was admitted to the hospital with a temperature of 100.2° F. At noon on the following day she had a temperature of 100.4° F. A cesarean section was performed at 2:30 p. m. At 4:00 p. m. she had a temperature of 101° F. During the next four days her temperature ranged from 99.2° F. to 100.4° F., and she frequently required sedatives and inhalations for her dry unproductive cough. There were no signs or symptoms referable to the gastro-intestinal tract. Although the mother occupied a private room, her baby was placed in the general newborn nursery and taken in to her every four hours for breast feedings. After each feeding, the baby was returned to the general nursery. Little attention was paid by anyone to the mother's "grippy" symptoms.

During the first five days the baby had breast milk, complemented with proprietary milk feeding, and water. The weight gain was from 7 pounds 3 ounces at birth to 7 pounds 8 ounces on the sixth day, and nothing unusual had been observed by the nurses in charge. On the sixth day there were noted no abnormal stools, and there was no dehydration. The temperature was recorded as 102.4° F. On the following day the temperature was 101.2° F. at 8 a. m., and while the weight was 7 pounds 7 ounces, there was no note made by the nurses of abnormal stools. On midnight of the eighth day the temperature was 103.4° F., the baby was irritable, the stools were frequent, thin, yellow, watery. Since something was obviously wrong, a pediatric consultation was then for the first time called. In addition to the gastro-intestinal findings, the pediatrician described the mucous membranes, pharynx and both ear drums as red and injected, and the fontanelle as bulging moderately. The infant was hyperesthetic. Saline solution was administered subcutaneously and fluids were forced by gavage. Within a few hours the infant had a convulsion, was cyanotic, and gave evidence which was very suggestive of both an intracranial hemorrhage and of an infection of the respiratory tract. Calcium gluconate in solution was given intramuscularly. Normal saline (70 c. c.) was given subcutaneously and citrated whole blood (18 c. c.) from the father was injected into the buttocks. In spite of good fluid management the infant lost 12 ounces during this first 24 hours of illness. The stools continued to be thin and frequent, but free from blood, mucus or pus. The temperature ranged from 102.6° to 103.6° F. during the last 36 hours of life. The clinical picture presented was rather characteristic of an intracranial hemorrhage, while at the same time there was unmistakable evidence of surface mucous membrane infection, and the stools and many of the general findings were rather characteristic of so-called epidemic diarrhea of the newborn.

The findings on cytologic examination of the blood are given because they correspond closely with those found in other infants in the same epidemic.

*Read in Section on Pediatrics, Southern Medical Association, Thirty-Third Annual Meeting, Memphis, Tennessee, November 21-24, 1939.

Erythrocytes	5,040,000
Leukocytes	16,700
Polymorphonuclears	45 per cent
(Segmented forms 26 per cent, stab forms 13 per cent, juvenile forms 6 per cent)	
Lymphocytes	5 per cent
Mononuclears	3 per cent
Early forms	2 per cent
Hemoglobin (Sahli)	113 per cent or 17.6 grams

The infant died at 1:55 p. m. on its tenth day. Except for its feedings, it had not been removed from the general nursery until 10 a. m. of the same day, just four hours before death. The obvious disadvantage of this hardly needs emphasis here. Unfortunately an autopsy was not obtained.

In considering the epidemiologic aspects of the situation it must be remembered that the mother of this infant was admitted to the hospital on August 13 with a fever, and that she then presented symptoms and a history of having had the week previous a respiratory tract infection. Her baby died on the tenth day. Also, it should be noted that in spite of a nice gain in weight and ample fluid intake during the first five days, the infant had a temperature of 102.4° F. on the fifth day, and that while there was no weight loss observed until the seventh day, that the infant must have been ill on both the fifth and sixth day. The infant was in the general nursery during all but the last 4 hours of its illness except to go to the mother for feedings or visits. This is of importance in considering the subsequent spread of the disease.

Then explosively, there occurred within the general newborn nursery, successive cases of epidemic diarrhea of the newborn, so that of the 21 newborns possibly exposed only six escaped. Fortunately, there were not many babies in the nursery at the time.

An outstanding clinical feature in this epidemic was that while the infants had a diarrhea characterized by small thin watery stools, it was not the voluminous watery type of diarrhea which rapidly dehydrates older infants suffering from intestinal intoxication or infectious diarrheas. In the more severe cases the infants after 24 to 48 hours of moderate looseness of stools became suddenly and acutely prostrated, had high temperatures and lost from 8 to 12 ounces in weight the next 24 hours with little or no apparent dehydration. In the moderately severe and severe cases, few temperatures failed to reach 102° F., with the majority exceeding 103° F., and several 105° F. Several of the infants after five to six days of normal behavior had some loose stools, followed within a few hours by convulsions and severe cyanosis. The outstanding symptoms were suggestive not of respiratory or intestinal difficulties primarily, but rather of intracranial involvement. So suggestive indeed were these symptoms that intracranial hemorrhage was suspected in two of the earliest deaths. At the postmortem examination of three of the infants which subsequently presented this same picture, the unusual picture was explained. Their brains were remarkably edematous, the cerebral edema being undoubtedly a most important factor in the severe and fatal cases. It was this which in symptomatology simulated intracranial hemorrhage. Microscopically a hemorrhagic tendency was observed in most of the organs, including the brain, but there were no gross intracranial hemorrhages. The blood vessels were friable and hemorrhage was more by extravasation and diapedesis than by rupture of the vessel wall. There was some suggestion of perivascular round cell infiltration in the brain. The mucosa of the large and small intestine is best described as if somebody had taken a dissolving chemical and washed it through the mucosa lined tube; the denuding of the mucosa was marked. The autopsies were done in one case immediately after death; in the others, one and four hours respectively after death.

There were no membranes or mucous casts within the intestines. The mesenteric lymph nodes were moderately enlarged. There were hemorrhages beneath the mucosa, minute in character, but numerous. There was no cellular infiltration in the mucosa or serosa microscopically. There was no evidence of bacterial invasion by the usual methods of either gross or microscopic observation. Cultures for the usual pathogenic enteric organisms were negative. The outstanding pathologic findings were the thinning and atony of the intestines, the cerebral edema, and the hemorrhagic tendency which was particularly marked in the brain and intestines, but was seen also in lesser degree in other tissues.

Because epidemic influenza and epidemic diarrhea of the newborn had seemed curiously to coincide epidemiologically, it was thought rational to give some citrated whole blood from an individual convalescing from epidemic influenza to one of the newborns which was ill with the disease. Such a blood was obtained and 30 c. c. injected intramuscularly into one of the newborns which was severely ill on the second day of its illness. The result was so remarkable that when two more severely ill newborns were encountered,

the same procedure was repeated. Each newborn so treated presented a very sudden onset of symptoms, with extreme prostration, temperature in excess of 105° F., convulsions, vomiting and cyanosis. The convalescent blood (30 c. c.) was injected into the buttocks and thighs in each instance. The clinical response was dramatic and undeniable, and the course of events was essentially the same in each of the three patients so treated. In a few hours the temperatures were much lower and the infants were clinically vastly improved. Their treatment was otherwise not unusual. They were given subcutaneous injections of normal saline, 10 per cent glucose in saline by gavage, and beginning 24 hours after the administration of blood they were given by gavage whole cultured lactic acid milk to which glucose to make a 10 per cent solution had been added. Vomiting occurred, but was not an important handicap. After 7 to 10 days these infants required but little medical supervision. Neither forcing the feeding by gavage, nor the added glucose, aggravated the diarrhea as some might expect it to do in bacillary dysentery. Dehydration did not develop.

We are not prepared to say what it was in the blood which we administered that was responsible for the beneficial results. We believe it was due to something more than coincidence. The same methods of protecting fluid balance, of giving glucose, of rational feeding and of avoidance of laxatives were used in caring for the other infants observed in this epidemic. Three of the more severely ill infants received blood transfusions, and only one of these recovered, and this only after a long protracted illness with repeated transfusions of normal adult blood. The first newborn to be so stricken received 18 c. c. of citrated whole blood (normal) from his father. However, this did not materially change his condition, for death occurred within 48 hours. The use of normal whole blood in transfusions and in intramuscular injections to stop apparent intracranial bleeding, is most interesting in connection with the use of the convalescent blood in the three instances described. In no sense acting as an adequate control, the relationship is full of interesting implications.

Of 16 newborns who were stricken with the disease, 5 died and 11 recovered. Of the 11 recovering, 5 of the illnesses could be classed as severe, 2 moderately severe, and 4 mild. Of the infants recovering, those receiving the citrated convalescent blood intramuscularly were clinically the most critically ill.

As a disease entity, epidemic diarrhea of the newborn may not be a new disease. It is quite possible that while seen in its most characteristic form in newborn nurseries, it may be encountered as an isolated disease of the newborn outside of a nursery. While it is quite likely also that it may be caused by several different incitants, at the same time it is interesting to note that in our epidemic we observed the same approximate 5 to 6 day incubation period frequently noted and described previously by others. Two of the mothers of the infants to whom the citrated whole blood was given probably had influenza during their lying-in period, and the third after her return to her home. This suggests another possible source of spread; that is, from a mother to her own baby, as well as from baby to baby in the newborn nursery. This certainly seems to have been what occurred in the instance of the first baby to contract the disease.

We do not mean to say that all forms of epidemic diarrhea of the newborn are of necessity so closely associated with the prevalence of influenza in the community as has appeared to be the case in our experience. We do believe, however, that there are certain implications in our epidemiologic observations, and that such a harmless procedure as the administration of citrated whole blood from someone who has recently convalesced from an attack of influenza warrants trial in similar circumstances. We are mindful of the limitations which necessarily restrict one in the consideration of such a common, but poorly defined, clinical entity as "influenza." We speak of it with as much accuracy as we possibly can, and consider that while we cannot be certain of the virus involved, yet at the same time we can be relatively certain that we are witnessing within the patient a clinical response to a viral invasion of that patient, rather than to a bacterial infection. We feel that it is quite likely that some of the viruses which are responsible for the inter-pandemic influenzas or grippal infections may be causative factors in some of the so-called epidemics of diarrhea of the newborn. We believe that in such instances this apparently characteristic response on the part of the newly born infant may in fact be simply the expression within the newborn and the newborn nursery of an infection from a commonly encountered virus which, attacking the older children and adult, would produce a clinical picture interpreted as an influenza or as a poorly defined non-catarrhal affec-

tion of the mucous membranes of the upper respiratory tract.

DISCUSSION (*Abstract*)

Dr. William W. Anderson, Atlanta, Ga.—I have not had an opportunity to observe in my neighborhood an epidemic of such fearful consequences as the epidemics of diarrhea in the newborn that have been reported in recent years. That these epidemics are variable is evident when the reports are studied, and they may best be classified as diarrheal conditions. The epidemic described by Dr. Folsom may well be primarily an epidemic of acute influenza. In acute infectious processes, particularly those with high elevation of body temperature, there is apt to be an accompanying diarrhea.

In recent years attention has been focused upon the failure of digestive secretions. In diarrhea there is marked reduction in the gastric acidity and in the enzymes of the gastric and duodenal secretions. There is clinical and experimental evidence that external heat, fever or infection may produce these effects.

When we consider the fact that in the past ten years the infant mortality rate from diarrheal diseases in infants under one month of age in the city of New York actually shows a slight increase, we wonder what other precautions we shall have to take with this age group. The uncontrolled expansion of lying-in institutions and the mass collective care of newborn in nurseries, with the great variety of institutions we have, municipal, endowed and private, large and small, most probably accounts for this increase in the death rate in the newborn. Add to this the lack of knowledge of the etiology and the mode of transmission of these epidemics, and the problem seems more complex.

Reading of surveys of outbreaks of epidemic diarrhea in the newborn such as Dr. Rice reports in New York, where among 3,672 living newborn babies 505 have diarrhea, a morbidity rate of 14 per cent of all babies born during that period, and of these 505 instances of diarrhea in the newborn 234 of them die, a mortality rate of this disease of 46 per cent, we think that we are reading statistics of plagues and pestilences of a thousand years ago.

That some of our newborn nurseries in maternal and general hospitals actually increase the hazards of babies put into them is evident, although we have not a control group of babies outside of nurseries to compare. Particularly should newborns be kept out of nurseries either if they are sick in any way themselves or if their mothers have any contagious disease. When mothers occupy large, private rooms, I can still see no reason why the baby cannot be better isolated in one corner of the mother's room. Of course the mother may be disturbed by the cry of the infant, but if she is not acutely ill this may be no serious handicap.

Although at times we are prone to think that the fault lies with the hospital, whatever the hospital is, our nurseries, our hospitals, our rules and regulations are our own. The rules are ours to make as we want them.

Until we can find out more about these epidemics, I think we should adhere most closely to our rules in asepsis. I know I go in nurseries sometimes and break rules; you know that you do, too. We shall have to be a little more rigid about that. We should isolate the babies from anything contagious; we should try to build up immunity in any way that we can, and we should immediately stop any admission to these wards where fearful epidemics occur.

Dr. Arthur G. Quinn, Memphis, Tenn.—Dr. Folsom and Dr. Lyon have presented an etiologic cause of infectious diarrhea in the newborn. Their treatment with citrated blood from convalescent influenza patients is striking in its results. Their study of influenza as a causative agent warrants further investigation.

In our series of over 200 cases of this infection occurring in 1933, 1934 and 1935, the first case was in January, 1933, there was none in February, three in March, one in April, six in May, four in July, none in August, one in September; October, November and December had twenty or more each. January and February and March, 1934, had sixteen, seventeen and twenty-two respectively. In the other months of the year, on into May, 1935, the number of cases varied between one and six per month.

Temperature was discounted as a symptom. Only 62 of our ill infants had fever preceding or in the first 24 hours of the illness. Pharyngitis occurred in 37 per cent of our cases. We encountered pharyngitis in many other infants in the nursery who presented no other evidence of being ill and had an otherwise uneventful well newborn course. Otitis media was present in about 25 per cent. Our first diagnoses in these cases were acute upper respiratory infections.

Some of our infants had diarrhea for two or three days. This diarrhea would clear up and the infant would apparently be well. None of these cases had a return of the infection.

Tabulation of the duration of the illnesses shows that the mortality of those sick under five days is 45 per cent, but as the disease persists over five days the mortality is 74 per cent.

Dr. Folsom's results from the use of blood are somewhat similar to ours. We found if we could give a blood transfusion in the first 24 hours our chances for life were good.

These cases are seen in private practice. Appropriate treatment stops the diarrhea, but occasionally death ensues, and the fatal outcome is ascribed to a blood stream or parenteral infection.

The epidemic nature of the disease in newborn nurseries is the result of conveyance of infection by the attendants. The literature leans toward the belief that it is a new entity. There are not direct references to the condition prior to the time our attention was called to the dehydration and initial weight losses. Various fluids and cow's milk formulas have been given to lessen these weight losses. It is my impression that infectious diarrhea in the newborn is the result of too early feeding with unnatural foods. This feeding changes the hydrogen ion concentration of the gastro-intestinal tract. According to Plantinga, Arnold and Moro, the change in pH permits a non-virulent organism to become pathogenic.

With prelacteal feedings as a cause in mind, we discontinued the use of any form of artificial feedings the latter part of 1935. Since that time diarrhea and vomiting in our newborn have been a rarity.

Dr. Folsom (*closing*).—Generally speaking, fever in any child has a tendency to inhibit normal digestive function. In most of our cases of epidemic diarrhea of the newborn, however, malaise, anorexia, weight loss and diarrhea preceded the fever.

Dr. Quinn has had a great deal of experience with

epidemic diarrhea of the newborn. From his discussion, it is apparent that there may be many different causative agents responsible for the production of this disease. As one reads the various reports which have been published, one notes quite a difference in morbidity and mortality rates. This appears to depend to a large extent upon the organism associated with the epidemic described.

Let me remind you that epidemic diarrhea of the newborn is as yet by no means a clearly defined clinical entity with a single causative factor responsible for its occurrence. On the other hand, there are a great many epidemics which, as our three have done, correspond in general epidemiologic characteristics with those reported by Frank, Rice, *et al.*, from New York City. The epidemics which clinically and epidemiologically follow this general pattern may, however, be caused by a single etiologic factor or by a group of closely related factors. It is not at all unlikely that the factor may be a virus. It is doubtful that it can be explained simply on the basis of a general response to a parenteral infection. The epidemiologic and clinical pattern is so clear-cut in most instances as to negate this.

In our series, the results obtained by giving convalescent influenzal serum seemed to point quite strongly to the fact that we were dealing with some kind of a virus infection. At any rate, if we encounter another epidemic of diarrhea in the newborn, we certainly shall give more convalescent influenzal serum if it is available. This is the only report we know of in an epidemic of diarrhea of the newborn where anything in the way of specific treatment was tried which yielded anything like a beneficial result.

We agree whole-heartedly with Dr. Quinn in what he has to say concerning the feeding of newborn infants. It probably is your experience, as it is ours, that most of these infants do not come under the care of a pediatrician during the newborn period unless they become ill. It is unfortunately a too common practice to start newborns on a formula shortly after birth, instead of merely attempting to keep up a proper fluid intake during the prelacteal period.

REPORT OF TWO RUPTURED GASTRIC ULCERS AND ONE RUPTURED DUODENAL ULCER IN THREE NEWBORN INFANTS*

By ARTHUR G. QUINN, M.D.
Memphis, Tennessee

Baby Davis was delivered by cesarean section, December 28, 1932; her birth weight 5 pounds, 9 ounces. She did well until January 2, 1933, took her feedings well and had the characteristic stools of an infant of this age. At 2:00 a.m. on January 2, or 5 days after birth, the infant had a watery, yellow stool. There were no other abnormal findings. At 2:00 p.m. the same day she vomited her feeding. She vomited again at 7:00 p.m. at which time the abdomen was markedly distended; the infant was cyanotic and appeared to be in shock. The abdominal distention could not be relieved and at 4:00 a.m., January 3, she vomited foul smelling, yellow material. Death occurred less than 24 hours after the appearance of symptoms.

Autopsy.—The body was that of a well developed, but dehydrated negro female. There were no external signs of trauma or violence, and no puncture wounds in the abdominal wall where an intraperitoneal injection could have been made. The abdomen was greatly distended and tympanitic, and on opening the abdominal cavity a great amount of foul gas was noted which when it escaped allowed the abdominal wall to collapse.

Internal Examination.—In the peritoneal cavity, a small amount of bloody fluid containing fecal matter was present. The omentum was spread over the coils of the small intestine and contained between its two layers a large amount of thick, brown, foul smelling fluid. The parietal peritoneum and that covering the coils of the small gut were hemorrhagic and contained a thin fibrinopurulent exudate on their surfaces.

The appendix was normal. The large bowel was of the usual size and of normal appearance. The entire small intenstine was thin walled, larger than the large bowel, and several times its normal diameter, being acutely swollen just proximal to the ileocecal junction. The subserous vessels were all congested and the peritoneal surface was hemorrhagic and covered by a fibrinopurulent exudate. A small probe could be passed through the ileocecal valve but a definite obstruction existed at this point. The lumen of the entire small gut was distended by partially digested milk curd. The stomach was distorted by a large bolus of milk curd and on the posterior surface, near the greater curvature in its lower portion was a perforation of the stomach wall. The perforation opened into the sac formed by the two layers of the visceral peritoneum as it folded over the stomach and transverse colon. The milk bolus was partially protruding from the perforation, whose edges were necrotic. The stomach wall was thin and congested except in the region of the pylorus where considerable hypertrophy of the wall had occurred. It could not be determined whether this hypertrophy had resulted in partial obstruction of the tract at this point or not. The esophagus was likewise dilated and thin walled, but its external surface appeared normal. The lumen was distended with undigested food (milk).

MICROSCOPIC EXAMINATION

In the lungs, many of the alveolar spaces were filled with an exudate consisting of serum, or of serum, fibrin and red blood cells. Only a few leukocytes were present. The blood vessels were dilated, thin walled and congested. Many of the smaller bronchioles were lined by a flattened columnar epithelium, and filled with red blood cells.

One surface of the abdominal wall was covered by a thickened and edematous peritoneal layer which was greatly infiltrated by polymorphonuclear leukocytes. Beneath this was a thickened layer of fibrous connective tissue, the site of extensive hemorrhage and infiltration by polymorphonuclear leukocytes. The blood vessels in this layer and in the muscular layers were dilated, thin walled and congested with red cells. The muscular layers appeared normal.

Section through the pylorus and duodenum revealed

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an enormously hypertrophied muscle layer in the pylorus, which was otherwise normal. The duodenum presented nothing unusual.

Section across the small bowel revealed marked congestion of the subserous vessels and a thick heavy exudate consisting of serum, fibrin, a great number of polymorphonuclear leukocytes and some red blood cells on the peritoneal surface. The inner layers of the intestine presented nothing unusual.

Section across the transverse colon revealed the same pathologic condition, that is, a fibrinopurulent exudate on its peritoneal surface, like that of the small intestine.

The ileum was thin-walled and presented nothing unusual except a congestion of the subserous vessels. At the junction of the ileum and cecum the muscular layer became greatly hypertrophied, and a large valve-like layer of hypertrophied muscle tissue surrounded by fibrous connective tissue and mucous membrane containing long, straight glands extending down to the fascial layer, projected upward into the lumen and partially overlaid the thin walled ileum.

The anatomical diagnosis was congenital stenosis of the ileocecal valve associated with dilatation of the entire small intestine, stomach and esophagus; perforation of the stomach; generalized fibrinopurulent peritonitis; acute parenchymatous degeneration of the viscera, and dehydration.

The outstanding features of this case are: an infant doing well, vomited following a feeding, which is not unusual; and four hours later vomited again. The abdomen was markedly distended, giving the appearance of an inflated ball. Attempts to relieve distention were unsuccessful. There were respiratory distress, cyanosis and shock.

Case 2.—Baby boy Erwin, born July 27, 1933, by normal delivery, did well for the first four days. At 2:00 a.m. on August 1, or five days after birth, he refused to nurse. His abdomen was greatly distended. The usual methods of relieving distention were unavailable. An x-ray picture of the abdomen showed nothing abnormal. The infant was operated upon at 6:00 p.m. for intestinal obstruction.

The peritoneal cavity was filled with fluid and bowel content. It was cleaned as well as possible with sponges. The gut was explored and perforation found in the first part of the duodenum. The infant died at 5:00 a.m. August 2.

The infant's temperature was normal prior to the day of illness and rose to 102° at the time of operation; 104° at time of death. The blood count showed 7,500 leukocytes with 40 per cent polymorphonuclears.

Autopsy.—The body is that of a well developed negro male infant. The peritoneum has been opened and is in communication with the outside by means of the rubber drain previously mentioned. The coils of the small intestine are distended with gas and bound together by a thin, bile stained fibrinous exudate. No free fluid or blood was present.

In the gastro-intestinal tract, the esophagus appeared normal except for some congestion of its submucosal veins. The stomach was of the usual size but slightly distorted by two fine catgut sutures binding the pylorus to the lesser curvature.

A red area, ovoid in shape, measuring 2 cm. in its greatest diameter, was present on the lesser curvature extending over the anterior and posterior surfaces of the stomach wall.

The lowest part of this area was just above the highest suture holding the pylorus to the lesser curvature. On opening the stomach along its greater curvature an ulcerated area 1.5 cm. in its greatest diameter was seen on the lesser curvature, corresponding in its location to the outer hemorrhagic area. The center of this ulcer had perforated and the floor was stained with bile. A smaller ulcer-like area was present below this point and had been repaired by sewing the pylorus to the lesser curvature.

The pyloric ring was patent. The remaining portions of the intestinal tract did not present anything unusual except a linear incision in the jejunum 15 cm. from its junction with the duodenum. This incision measures 1.5 cm. in length. Its edges were clean and were approximated by fine catgut sutures.

Miscroscopic Examination.—In the esophagus, the stratified squamous epithelium was intact and the remaining layers of the wall showed no changes other than enormous dilatation and congestion of the veins in the submucosa.

A marginal section of the stomach wall, ulcer and point of perforation showed marked hemorrhage into all layers of the stomach, particularly the subserous layer adjacent to the point of perforation, with considerable infiltration of inflammatory cells. The mucosa was entirely absent and the floor of the ulcer rested upon the muscularis. About the periphery of the ulcer the mucosa and submucosa were present, but the latter structure was edematous, and hemorrhagic. Scattered foci of inflammatory cells were present in that portion of the section farthest away from the ulcer, and the structure here was practically normal.

In a mesenteric lymph node, the structure appeared normal except for excessive numbers of inflammatory cells, which tended to obscure the Malpighian bodies.

The anatomical diagnosis was, primary series, acute gastric ulcers, with perforation of one; acute fibrinous peritonitis; acute parenchymatous degeneration of the viscera; incised wound of the jejunum and of the anterior abdominal wall; subsidiary causes, none.

The cause of death is the primary series.

Having in mind the clinical symptoms of sudden vomiting, abdominal distention and shock as they occurred in the previous case, the preoperative diagnosis was intestinal obstruction.

It was at first thought that we had a ruptured ulcer of the gastro-intestinal tract, but the absence of pneumoperitoneum led to the diagnosis of intestinal obstruction.

The operative findings proved the first premise was correct; yet, there was no pneumoperitoneum present.

Case 3.—Baby girl Pipion, born January 29, 1934, birth weight 5 pounds 8 ounces, was put on a formula at the end of the first 24 hours, on account of a bad cold in the mother. On January 31, at 9:00 a. m., the infant did not take the formula well. At 10:00 a.m., respiration was slow and shallow; the baby cyanotic and apparently in shock; the abdomen distended. An enema was given and her condition seemed to be improved, but the abdomen was still distended. She had some slight difficulty in breathing but no cyanosis. At 11:00 a. m. on the same date, the infant's abdomen was x-rayed. There was no cyanosis, but slight difficulty in breathing. Her temperature was normal. She became cyanotic at 2:30 p.m. Gastric lavage was done with bicarbonate solution. The fluid returned clear except for a few large milk curds. The abdomen was distended. A bowel movement occurred, small in amount, well formed, yellow, tinged with bright blood. X-ray of the abdomen showed pneumoperitoneum. She was operated upon at 4:00 p.m. the same day, or less than six hours after the onset of symptoms.

On opening the peritoneal cavity a rush of gas, apparently air, escaped. There were considerable stomach content and milk in the peritoneal cavity. A large area on the anterior wall high up on the cardiac stomach was seen, the upper end of which terminated in a perforation about 1.5 cm. in diameter.

The infant died February 5, 1934, five days after operation.

A note on February 1 stated that so far the postoperative course had been uneventful; no evidence of shock had been present. There had been no symptoms of shock as a result of rupture since operation. If the infant could be maintained at this level, the prognosis was fair. The next day this note was made: "There is some hardness of the muscles of the thighs which is the result of trauma due to intramuscular injections of fluid. There is marked irritability. The prognosis is still fair." The next day this note: "What was at first thought to be the effect of subcutaneous fluid, is a sclerema involving face, arms and legs. The condition is bad." The next day, the sclerema was progressive, and the prognosis fatal.

Autopsy.—The baby died February 5, 1934. External examination showed the body of a full term negro female infant, which did not appear unusual except for an upper midline incision of the abdomen whose edges were clean and approximated by black silk sutures.

Internal examination disclosed in the peritoneal cavity deposits of a serofibrinous exudate which tended to become fibrinopurulent in nature, present everywhere. The omentum was drawn upward across the anterior stomach wall and was closely adherent to the latter structure by the exudate. No free fluid was present.

The omentum was made adherent to the anterior stomach wall by the exudate, and was also held there by black silk sutures. The stomach was enlarged and the external vessels were congested. A firm mass was palpable in the fundus, which proved to be, when the stomach was opened, the infolding of the stomach wall produced in repairing the site of perforation by the black silk purse string suture. The pyloric ring was definitely hypertrophied and a moderate grade of stenosis existed at the point in the lumen of the tract. The ileocecal valve was also greatly hypertrophied producing a pocket-like sac at the end of the ileum.

The lungs were markedly congested with hemorrhages throughout. The bronchioles and alveolar spaces were filled with serum, fibrin, red cells and small round cells. Leukocytes of the polymorphonuclear variety were not abundant. There were areas of atelectasis. The liver was markedly congested; the spleen, very markedly congested with hemorrhages into its pulp, and a fibrinous exudate on the surface. Section was made through the site of repair of the perforation; the mucosal surface was covered with mucosa. The mucosa was congested and ulcerated. The submucosa was edematous and infiltrated with enormous numbers of polymorphonuclears and small round cells. There was fibrosis but no giant cells about the silk suture. The serosa was covered with thick fibrinopurulent exudate.

The anatomical diagnosis was primary, perforated acute peptic ulcer (clinical), generalized fibrinous purulent peritonitis; and bilateral bronchopneumonia. The cause of death was bronchopneumonia.

DISCUSSION

Three cases of ruptured ulcers of the gastro-intestinal tract are reported.

The etiologic factors were not determined. It is strange that two occurred in a year when we were having an epidemic of infectious diarrhea, one in July 1933, and one in January, 1934. The case in January can be said to have occurred from this cause. We were having diarrhea, but no deaths as yet.

Two diagnostic criteria stand out. First, pneumoperitoneum was determined by x-ray; yet this failed in the first case x-rayed.

The other diagnostic point is that abdominal distention occurred suddenly in an otherwise healthy infant. The distention was symmetrical and had the feel and appearance of an inflated round bag. It is very suggestive of rupture, if distention cannot be relieved.

We had discussed distention in the first two cases. The nurse in charge had made the diagnosis and ordered x-rays of the abdomen as a result of this type of distention. As you will recall, it was operated upon within six hours after the first symptom.

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DIHYDROTACHYSTEROL, PARATHORMONE AND VITAMIN D_2: COMPARISON OF THEIR VALUES*

IN THE TREATMENT OF POST-THYROIDECTOMY HYPOCALCEMIC TETANY

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During the past two years eight cases of acute tetany as a result of parathyroid injury or removal have followed 1,000 operations upon the thyroid gland in the Thyroid Clinic of the Grady Hospital and in some of the private hospitals of Atlanta. These operations were performed by many different surgeons and the incidence is calculated at 0.8 per cent, which compares favorably with similar statistics from other clinics. However, beginning two years ago, a special study has been made of all postoperative thyroid cases for clinical evidence of mild or poorly manifest cases of chronic tetany with hypocalcemia and the results are somewhat astonishing. Eleven such cases (2.1 per cent total) have been found and studied among the thousand cases.

Tetany may be described as a symptom complex of increased excitability of the motor nerves and of certain parts of the central nervous system which is usually due to the removal of, or interference with the circulation of the parathyroid glands which may occur during a total or subtotal removal of the thyroid as well as following purposeful removal of the parathyroids. Hypoparathyroid tetany may be manifest within several hours after operation or may be latent with mild symptoms developing weeks or months later. It is always characterized by the following biochemical changes: (1) lowered serum calcium level, (2) increased serum phosphorus level, and frequently (3) cataracts and (4) trophic nail changes. Tetany may occur in two other groups of conditions, (a) alkalosis, persistent vomiting, hyperventilation, certain drug effects, (b) rickets, osteomalacia, steatorrhea, sprue, chronic diarrhea, and chronic renal insufficiency, but in these conditions the serum calcium is normal or may be slightly increased due to a rise in the hydrogen ion concentration. During recent months, reports[4] of several cases of true idiopathic hypoparathyroid tetany have been made which fulfilled all requirements for such a diagnosis. Upon none of them had an operation been performed. Autopsy findings in one case revealed an interesting replacement of normal parathyroid tissue with large fat cells varying in size and staining qualities.

Injury to or removal of the parathyroid glands may take place even when the surgeon uses particular care to prevent such an accident. Two on each side, usually located on the posterior capsule in the region of the inferior thyroid artery, they may be recognized as pearl-yellow structures slightly less than 1 cm. in diameter. Anomalous locations are frequently encountered and ligation of the major arterial trunks to the thyroid may embarrass or destroy the circulation to these small glands. Hyperplasia of remnants is known to take place along with development of adequate collateral circulation followed by complete or partial return of function of the gland. Many surgeons advocate very careful examinations of all parts of thyroid glands immediately upon removal and transplantation into muscle tissue of a parathyroid gland found to have been removed.[5] [6] It requires considerable experience to recognize these structures and the results of such transplants have not always been successful.

The typical clinical manifestations of tetany have been described as (1) carpopedal spasm (Trousseau's sign), (2) facial irritability (Chvostek's sign), and (3) laryngeal stridulus,[1] and they usually occur twenty-four to forty-eight hours after operation. They may appear spontaneously or may require some form of external stimulation for induction. The diagnosis is usually obvious and immediate therapy is required. In the chronic forms, however, many of which do not present at any time clear-cut evidence of the condition, the diagnosis is dependent upon intelligent suspicion of many indefinite, and frequently bizarre complaints. The more common of these are: (1) numbness of the hands and feet, causing "dead or sleepy feeling," (2) drawing of the muscles of hands, feet and throat, (3) tingling and other peculiar sensations of the extremities, (4) difficulties with vision, and (5) constriction of chest and neck muscles, causing dyspnea and smothering. Evidences of hypothyroidism frequently coexist and may obscure the parathyroid deficiency to a considerable extent. To avoid overlooking this condition all patients in our clinic now have routine serum calcium and phosphorus determinations done

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*From the Junior League Thyroid Clinic, Grady Hospital, Atlanta.

along with basal metabolic studies at stated intervals following thyroid operations.

TREATMENT

As all symptoms of hypoparathyroid tetany are due to the lowered serum calcium plus the increased phosphorus elimination, so likewise all therapeutic measures are directed toward raising the calcium level in the blood and restoring the normal phosphorus ratio. Among other important physiologic functions, calcium regulates the excitability of nerve fibers and nerve centers, and it is estimated that the minimum adult calcium needs is about 0.5 to 1 gram per day. The normal diet supplies an excess of calcium; however, only about 25 per cent of the ingested amount is absorbed. The normal serum calcium is 10 mg. per 100 c. c.,[7] of which 2 mg. is held in simple solution and is ionizable. From 3 to 5 mg. is combined with plasma protein and therefore is nondiffusible. The remainder (5 to 7 mg.) is held in solution in an unknown manner, possibly by a principle of the parathyroid glands which is diffusible and active. Calcium, therefore, is the basis of all methods of therapy and must be made available for absorption, preferably from the intestinal tract. In this series the gluconate and lactate have been used for economic reasons and found to be satisfactory.

PARATHORMONE

The parathyroid hormone is an extract derived from the parathyroid glands of edible animals by the method of Collip. It may be given parenterally or perorally, but the latter method of administration requires exceedingly large doses. A usual parenteral dose (100 units) produces the following effects: (1) increases serum calcium, (2) decreases serum phosphorus, (3) increases output in urine of calcium and phosphorus, (4) increases ionized calcium in the blood, and (5) obtains calcium needed for these increased demands either from ingested calcium or from stores in the bone. It also causes a late rise in the serum phosphate. It has been postulated that some principle in the parathyroid hormone acts as a solvent for calcium, thus enabling the serum to hold additional amounts of the mineral. Compared with other forms of treatment, the effect of parathormone is quite rapid (latent period 4 hours, duration 20 hours) and it is given for the relief of acute tetany along with calcium gluconate parenterally. Daily intravenous injections, the high cost of such a preparation and the fact that a tolerance is developed due to a gradual loss of its effect limits its use over a long period of time. It is thought by Albright[8] that it has no action on absorption of calcium from the intestinal tract even though it raises the serum calcium level.

DIHYDROTACHYSTEROL

The first report (Holtz[9]) concerning the value of dihydrotachysterol in treatment of postoperative tetany was soon followed by similar observations in Germany and in this country.[10] [11] [12] [13] A supply was furnished us along with the crystalline vitamin D_2 substance in 50,000 unit capsules for comparison of values in the routine treatment of this condition.

HISTORY

The first suggestion that the toxic effects (calcium deposit and hypercalcemia) and the antirachitic effect of irradiated ergosterol were caused by different factors was made by Bamberger,[14] von Wendt[15] and Windaus.[16] The toxic factor (called "Calcinosefaktor" by Holtz[17]) was thought to be due to an overabundance of the antirachitic factor of hypervitaminosis. Holtz, Gissel and Rossmann[18] found that irradiation of ergosterol with ultraviolet light produced the following substances: ergosterol, lumisterol, tachysterol, vitamin D_2 (calciferol), toxisterol, suprasterol I and II. Of these, vitamin D_2 alone contained the antirachitic factor. Holtz[19] then conceived the idea that the "Calcinosefaktor" might be used to treat the hypocalcemia of parathyroid deficiency.

During the early observation of the irradiation products of ergosterol and in an attempt to isolate certain toxic factors from the crude product (viosterol) which gave rise to headache, vomiting, nausea, hematuria and moderate hypertension, it was noted that hyperirradiation of the already activated ergosterol yielded a compound which was devoid of the antirachitc activity of the mother substance, but yet retained the "Calcinosefaktor." This substance was found to be dihydrotachysterol (Antitetanisches Präparat No. 10), which caused a marked increase in serum calcium.[9] It is supplied for clinical use in sesame oil solution (0.5 per cent), each c. c. of which represents 100 toxic borderline doses (25 gamma). The dosage varies widely with the individual and the degree of parathyroid deficiency. In mild cases two to five c. c. per week is sufficient. In acute cases, five to ten c. c. per day have been used with gradual reduction as serum calcium increases. As there

is a marked tendency toward production of hypercalcemia because of the cumulative action of the drug, frequent serum calcium determinations must be made. Recently a simple test for calcium in the urine using the Sulkowitch reagent has been described[20] and this gives a fair estimate of the serum calcium level and can be done by the patient.

An increased amount of dihydrotachysterol is required during pregnancy, menstruation and severe nervous strains. Cataracts can be prevented, but do not improve once they have developed. It has been used with good results in other conditions associated with hypocalcemia, such as hemophilia, impetigo herpetiformis, peripheral vascular conditions, sprue, bronchial asthma, urticaria and drug eruptions. Very little is known concerning the action of the drug on body chemistry. Holtz and Kramer[21] found both fractions of calcium in the serum elevated (ionized and bound to protein). Elevation of serum calcium is followed by increased urinary calcium excretion sometimes with stone formation. Fecal calcium is decreased. If calcium is not available from the intestinal tract, it will be mobilized from stores in the bones. Snapper[22] and Arnold and Blum[12] found a lowering of the serum phosphate level after treatment with dihydrotachysterol and others found that its action is antagonized by estrin and the male sex hormone.

VITAMIN D_2

Vitamin D as commonly used refers to the crude irradiation product of ergosterol. It contains several factors and depends chiefly upon its vitamin D_2 content for its activity (viosterol). Vitamin D_2 is of plant origin and is obtained by the irradiation of sterol from ergot (ergosterol). Vitamin D_3 is found in fish oils and is an irradiation product of dehydrocholesterol.

Irradiation of ergosterol under the most favorable conditions yields about 50 per cent vitamin D_2 with tachysterol and luminsterol accounting for the balance. Pure crystalline vitamin D_2 is constant in its physical characteristics and has a biological value of forty million U.S.P. XI units per gram. It is commercially available in a propylene glycol solution (Drisdol) in a concentration that gives 10,000 units per gram (250 units per drop). For this study a capsule containing 50,000 units (0.00125 gm.) of the pure vitamin in sesame oil was used.

CASE REPORTS

Eleven cases of hypocalcemic tetany following operation upon the thyroid gland have been treated in the Thyroid Clinic during the past two years. Two of these were of the acute type requiring immediate treatment while in the hospital. The others[9] were of the chronic type, varying considerably in degree and duration and have been treated in the Outpatient Clinic. In this set-up it has been possible to adapt some of the experimental findings reported in recent years to clinical experience. It has not been possible to carry out any control over calcium and phosphorus intake or excretion; serum calcium determinations have been made at weekly intervals and all patients are now carrying out urine tests at home to control intake of calcium.

Case 1, Acute Postoperative Tetany.—Miss C. A., aged 25, was admitted to the Piedmont Hospital on October 26, 1938, for treatment of typical Graves' disease with exophthalmos. First-stage subtotal thyroidectomy was done on October 31 and as no reaction occurred, the second stage was done five days later (November 3). Eighteen hours later definite tetany had developed with carpopedal spasm, laryngeal stridulus and facial irritability. Parathormone 100 units and calcium gluconate 1 gram were given parenterally at once. Serum calcium (4 hours later) was 7.3 mg. and serum phosphorus 3.3 mg. Five c. c. of dihydrotachysterol was given perorally four hours later along with calcium gluconate by mouth and parenterally. This treatment was continued through the next day, by which time the patient had definite evidence of bronchopneumonia. This proved to be mild and soon subsided. Dihydrotachysterol was reduced to 3 c. c. on the third day and to 1 c. c. on the fourth day and continued at this dosage for three days. When omitted for one day, drawing of the hands recurred and dihydrotachysterol was increased to 5 c. c. Daily serum calcium determinations ranged between 5.5 and 7.3 mg. and serum phosphorus from 3.3 to 4.8 mg. Dihydrotachysterol was gradually reduced to 1 c. c. daily and the patient discharged on the tenth postoperative day.

The patient used 45 c. c. of dihydrotachysterol in varying doses (0.3 c. c. to 5 c. c.). Symptoms were always much worse during menstrual periods. Calcium in the form of gluconate powder has been taken continuously, using 6 to 12 grams per day. By September 9 (eleven months after operation) improvement was sufficient to omit dihydrotachysterol entirely and substitute vitamin D_2 (50,000 units daily perorally). Serum calcium at that time was normal (10.0 mg.) for the first time since operation.

A typical case of acute tetany was caused by removal of the parathyroids during thyroid operation. The patient responded well to administration of calcium gluconate and dihydrotachysterol and was maintained without symptoms. Blood calcium remained low for many months (three without symptoms) and has now returned to normal. The patient is now symp-

tom-free by using vitamin D_2 and calcium gluconate perorally, and these will be continued indefinitely. Marked increase in symptoms during menstrual periods is noteworthy.

Case 2, Acute and Chronic Postoperative Tetany.—Mrs. G. W. H., aged 31, had subtotal thyroidectomy for recurrent exophthalmic goiter on March 6, 1935, at the Grady Hospital. Tetany occurred thirty-six hours after operation, which was relieved with parathormone 100 units and viosterol 10 drops (serum calcium 5.7). This was continued for one month and cod liver oil 3 grams substituted for parathormone. The basal metabolic rate dropped to —24 per cent and thyroid extract grains 2 was added. Seven weeks after operation tetany recurred and the patient returned to the Emergency Clinic, where calcium gluconate 1 gram and parathormone 100 units were given parenterally. When dismissed she was given thyroid extract grains 1 and calcium lactate 1 gram to continue indefinitely. All evidence of tetany had disappeared four months following operation. She became pregnant soon afterwards and tetany recurred, but was relieved by parathormone 100 units and calcium gluconate parenterally. Several spasms occurred before parturition. Calcium lactate 3 grams and thyroid extract grains 2 were continued during 1936 at intervals and no symptoms appeared until later in December (cramps, drawing and severe headaches). She was not seen again for two years, when she returned in the sixth month of another pregnancy complaining of cramping. Serum calcium at this time was 7.4 mg. and serum phosphorus 2 6 mg.; this rose to 8.25 mg. and 4.8 mg. following administration of calcium lactate 3 grams and vitamin D_2 by mouth 50,000 units. She has not returned to the clinic since February, 1939.

Typical tetany occurred following subtotal thyroidectomy for recurrent exophthalmic hyperthyroidism. Relief followed administration of parathormone, calcium lactate and vitamin D_2. She also developed symptoms of hypothyroidism requiring thyroid extract grains 2 for relief. The case has been complicated with two pregnancies since operation, the last of which caused a return of symptoms of hypoparathyroidism. She is maintained symptom-free with calcium lactate and vitamin D_2.

Case 3, Acute and Chronic Postoperative Tetany (Mild).—Mrs. M. G., aged 37, had subtotal thyroidectomy for multiple cystadenoma (NNT) at Grady Hospital on January 8, 1936. Mild tetanic spasms of hands and feet took place sixteen days after operation. These were relieved with calcium gluconate 1 gram intravenously and 3 grams perorally. During the next several months symptoms appeared only during menstrual periods. Twenty months later she developed severe drawing in the hands, face and feet, which was relieved with calcium lactate 3 grams perorally. Three and one-half years after operation she returned to the clinic with definite evidence of chronic tetany (carpopedal spasms, gastro-intestinal distress, diarrhea, positive Trousseau's sign). Serum calcium was 8.0 mg. and serum phosphorus 5.2 mg. Symptoms were controlled with calcium gluconate 6 grams perorally daily. On account of the strongly neurotic temperament of the patient all medication, including calcium lactate, was omitted on August 28, 1939. Three days later she was brought back to the hospital with a typical attack of acute tetany (serum calcium 5.7 mg.). Parathormone 100 units and calcium gluconate 1 gram were given parenterally, which relieved symptoms immediately. The latter, plus vitamin D_2, 50,000 units, will be continued indefinitely The blood calcium rose to 14.49 mg. following the last parathormone injection, but apparently caused no untoward symptoms.

Mild but definite tetany in a very nervous and emotional female was misinterpreted in the clinic and an acute attack was necessary to convince some members of the staff. Severe diarrhea is the most troublesome symptom. Hypercalcemia produced no symptoms.

Case 4, Chronic Tetany During the Menopause.—Mrs. C. A. W., aged 44, had subtotal thyroidectomy at Emory University Hospital on April 6, 1936, for nodular, non-toxic goiter. Three months later she developed drawing, numbness and dryness; serum calcium 6.7 mg. and serum phosphorus 4.3 mg. She was treated by a private physician with calcium lactate (6 grams daily) until November 14, 1938, when she entered the Thyroid Clinic at Grady Hospital. Serum calcium following mouth intake was 9.13 mg. and phosphorus 3.2 mg. She was given dihydrotachysterol 0.3 c. c. daily plus calcium lactate 6 grams and brewer's yeast. Two months later the serum calcium had risen to 15.36 mg. (phosphorus 2.7 mg.) and all medication was discontinued. One week later the serum calcium was 8.64 mg. and symptoms returned. Dihydrotachysterol 0.3 c. c. was given daily along with calcium lactate 4 gm.; symptoms varied considerably on account of a definite menopausal nervous and mental instability. The serum calcium varied from 6.6 mg. to 9.4 mg. with serum phosphorus fairly stable at 4.3 mg. (average). Beginning in May, 1939, dihydrotachysterol was discontinued and vitamin D_2 in 50,000-unit capsules was given perorally with the same amount of calcium gluconate. Symptoms have improved slowly but definitely, and at the end of three months all medication, including calcium, was stopped. The serum calcium was 7.98 mg. and serum phosphorus 3.33 mg. after one month without therapy. On account of occasional mild symptoms she has been advised to take calcium gluconate by mouth at necessary intervals.

This was a case of mild but definite tetany complicated with menopausal symptoms, successfully stabilized by the use of dihydrotachysterol, vitamin D_2 and calcium gluconate perorally.

Case 5, Tetany with Convulsions Following Removal of Aberrant Thyroid.—Mrs. J. R. C., aged 33, had had the left lobe of the thyroid and an aberrant nodule on the left removed for nodular toxic goiter on November 9, 1937, at the Grady Hospital. Hoarseness and aphonia existed for three months after operation, but cleared up entirely except when the patient was very nervous, excited, or fatigued. Ten months after operation a convulsion occurred; this was associated with shortness of breath and tightness in the chest. Calcium lactate (3 grams) by mouth relieved the condition and prevented recurrence. Without it she states that "she goes down hill and cannot get her breath, hands become numb,

knees and hands draw badly." She was given dihydrotachysterol 1 c. c. every second day. Serum calcium 8.1 mg. to 10.94 mg. and serum phosphorus 2.6 mg. to 6.1 mg. The dihydrotachysterol was reduced to 0.3 c. c. daily and calcium gluconate to 1.5 gm. After six months dihydrotachysterol was discontinued, but she still takes calcium gluconate irregularly. The last serum calcium (July 31, 1939) was 8.2 mg. and serum phosphorus 3.3 mg.

A young woman of strong neurotic temperament developed definite convulsions and spasms when calcium lactate was stopped following thyroid operation. By using dihydrotachysterol and calcium gluconate perorally the symptoms have been relieved and the serum calcium increased to normal limits. The right lobe of the thyroid was not disturbed at the time of operation.

Case 6, Chronic Tetany.—Mrs. B. W., aged 46, had subtotal thyroidectomy for nodular non-toxic goiter on February 19, 1938, at the Grady Hospital. She developed hoarseness and a peculiar wheezing in the throat immediately. (The trachea was opened during operation.) Four months later she developed tingling in the feet and hands, drawing, numbness and said that the "extremities go to sleep easily." Her serum calcium was 7.1 mg. and serum phosphorus 5.2 mg. She was given vitamin D_2, 50,000 units per day, and calcium gluconate 6 grams daily perorally. This has been continued for six months and practically all symptoms have disappeared. In July, 1939, she developed severe choking, "felt crazy" and was brought to the hospital. Immediate relief was obtained with parathormone 100 units and calcium gluconate 1 gram parenterally. Vitamin D_2 was discontinued in September, 1939. Her serum calcium has varied from 7.6 to 11.5 mg. (August 7, 1939) and her serum phosphorus from 4.2 to 6.4 mg.

A mild but definite tetany was entirely relieved by use of vitamin D_2 and calcium gluconate perorally.

Case 7, Chronic Tetany with Myxedema.—Mrs. W. H. K., aged 42, had subtotal thyroidectomy for exophthalmic goiter at the Grady Hospital on November 10, 1937. There was definite clinical evidence of myxedema with drop in basal metabolic rate to —24 within two and a half months following operation. This was controlled by the use of desiccated thyroid extract (2 grains daily). Numbness in the hands and arms was noticed by the end of six months and the serum calcium dropped to 7.2 mg., serum phosphorus 5.1 mg. Calcium lactate 3 to 6 grams and vitamin D_2 (cod liver oil 5,000 units) have controlled the symptoms. Her last serum calcium was 10.3 mg. (August 18, 1939) and basal metabolic rate + 2. All treatment has been discontinued including thyroid extract.

A case of mild hypoparathyroidism associated with hypothyroidism was relieved by thyroid extract, calcium lactate and vitamin D (fish oil).

Case 8, Myxedema and Tetany.—Mrs. R. C. H., aged 32, developed definite myxedema (basal metabolic rate — 20 per cent) following subtotal thyroidectomy for exophthalmic goiter on April 8, 1932, at the Georgia Baptist Hospital. She was pregnant at the time and this was not interrupted. Associated with the symptoms she also developed numbness, drawing and cramping of hands and feet. She entered the Thyroid Clinic in November, 1934, and her symptoms were relieved by thyroid extract grains 2 and calcium lactate 4 grams daily. She has not cooperated well, and has not returned since June 6, 1939. At that time her serum calcium was 8.3 mg. and serum phosphorus 4.2 mg.

Another case of myxedema associated with mild tetany apparently relieved with calcium lactate alone. These symptoms followed thyroidectomy performed during pregnancy.

Case 9, Tetany Following Total Ablation of the Thyroid for Cardiac Complications.—Mrs. S. D., aged 58, had total removal of the thyroid done on June 6, 1939, at the Grady Hospital for thyrocardiac disease. This was followed by mild symptoms of tetany (numbness and drawing of hands and feet), serum calcium 8.62 mg. and serum phosphorus 4.0 mg. Calcium lactate 4 to 6 grams daily perorally relieved these symptoms.

This is the type of operation that might readily be followed by tetany. The symptoms were probably due to temporary interference with the circulation to the parathyroids.

Case 10, Tetany and Myxedema.—Mrs. A. T. K., aged 25, had a subtotal thyroidectomy at the Grady Hospital on June 10, 1936, for simple colloid goiter. This was followed by symptoms of myxedema and a basal metabolic rate of minus 20 per cent. This was relieved with 2 grains of thyroid extract daily. Three years later she developed drawing, numbness, and difficulty in breathing. Calcium lactate 3 grams was added and symptoms were relieved. This was discontinued after three months, but it has been necessary to continue thyriod extract (2 grains) daily). Serum calcium was 7.2 mg. and serum phosphorus 4.2 mg.; these changed to 9.3 mg. and 3.7 mg. after therapy.

A mild form of chronic tetany was readily controlled with calcium lactate perorally.

Case 11, Acute Postoperative Tetany.—Mrs. H. S, aged 39, had a single stage thyroidectomy done August 21, 1939, for toxic adenomatous goiter at Emory University Hospital. Twenty-four hours later she complained of "drawing of the mouth" and in another twenty-four hours she had numbness of extremities. Her serum calcium was 7.2 mg. She received calcium gluconate 1 gram parenterally along with 100 units of parathormone, which relieved the condition for three days. Calcium gluconate 4.5 grams was given perorally each day. On the fifth postoperative day she had severe carpopedal spasm with positive Trousseau's sign. One hundred units of parathormone parenterally was added to the daily medication. Serum calcium determinations averaged 7.0 mg. On the tenth postoperative day, 0.5 c. c. of dihydrotachysterol was added to parathormone and calcium gluconate when the patient complained of drawing of the hands. Except for occasional "drawing sensations," the symptoms were relieved and parathormone was discontinued after the eighteenth day (serum calcium 8.2 mg.). Calcium gluconate 1 gram parenterally plus 100 units of parathormone were given for return of any symptoms. At the end of the third postoperative month, serum calcium was low—6.1 mg. Hysterectomy for bleeding fibroids done on November 7, 1939, was followed by mental symptoms, but only slight manifesta-

tions of tetany. The patient is maintained now on 50,000 units of vitamin D_2 and 9 grams calcium gluconate perorally.

Acute hypocalcemic tetany following thyroidectomy was relieved by calcium gluconate and parathormone parenterally. An inadequate amount of dihydrotachysterol did not control symptoms well and the serum calcium remained low. The patient was maintained satisfactorily without symptoms with vitamin D_2 and calcium gluconate. Damage to the parathyroid may be partial and some return of function is expected.

SUMMARY

Eleven cases of hypoparathyroid tetany in which an operation upon the thyroid had been done have been presented along with the diagnostic criteria for variations in degree of this condition. A discussion of various methods of treatment has been given in detail.

For the immediate treatment of acute postoperative tetany, calcium gluconate should be given parenterally with parathormone or dihydrotachysterol. In the chronic cases, calcium gluconate (or lactate), dihydrotachysterol, and vitamin D_2 have been used satisfactorily.

The effect of parathormone is gradually decreased as a tolerance is developed. Parathormone has no effect upon the absorption of calcium from the intestinal tract.

Dihydrotachysterol has both of the fundamental actions of vitamin D_2, namely: (1) increases calcium absorption and (2) increases urinary calcium excretion. The ratio of these two actions is greater than with vitamin D_2 which explains why dihydrotachysterol is not antirachitic. It resembles parathormone in promoting increases in excretion of urinary phosphorus. Vitamin D_2 produces the same actions as dihydrotachysterol, but because of the lesser ration it is antirachitic. Its action is slower to begin with, but lasts longer than dihydrotachysterol.

In this series, dihydrotachysterol and vitamin D_2 were found to be equally effective in controlling the symptoms of hypoparathyroidsm and in maintaining the serum calcium level near the normal. Each preparation has advantages over parathyroid hormone if continued over a long period of time.*

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*The dihydrotachysterol and crystalline vitamin D2 substance were supplied by Mr. Charles B. McDermoot, of the Winthrop Chemical Company of New York.

DISCUSSION (*Abstract*)

Dr. James W. Bodley, Memphis, Tenn.—Dr. Poer mentioned the many patients who have been classed as neurasthenics, who have calcium deficiency. Possibly many of our cases should have blood calcium determinations, since neurotic symptoms of tingling, drawing, and the feeling of poor circulation in the extremities might be helped by treatment for calcium deficiency.

On the other hand are those cases that all of us who do surgery have seen, in which there has been damage, either immediate or latent, to the parathyroids, for which we have habitually in the past given calcium. Actually it is the calcium metabolism that is mainly affected by either destruction or injury to the parathyroid glands.

Dr. Poer has separated treatment into acute, subacute and chronic types. Many cases that possibly we have called in the past edema of the glottis, or edema of the trachea, were a constriction due to the lack of calcium.

Dr. Poer (closing).—I am afraid that in attempting to present the background for our treatment we had not much time left to discuss the many clinical manifesta-

tions which were presented in these eleven cases. Two of them were definitely and typically acute. The other case occurred only recently, in August. The house surgeon operated upon a nodular, toxic goiter, encountered difficulty in removing the gland, in controlling the bleeding at the inferior pole on each side, and I feel sure that is where the difficulty came about.

The interesting thing about this case is that the house staff treated the patient, was not posted well on the exact amount of dihydrotachysterol, and used only 0.5 c. c. per day. She also received parathormone and calcium gluconate in insufficient amounts. Therefore, tetany recurred and blood calcium reached a very low level. This case, when published, will illustrate that fact well.

The other chronic cases were more or less run-of-the-mill type, one of which followed a total ablation done two years ago for heart failure. In that type of operation we should expect to get many cases of hypoparathyroid tetany, but fortunately, perhaps, this operation is not being done so frequently now, and that type will not continue to occur.

A COMPARISON OF SKIN REACTIONS OBTAINED BY THE USE OF BRUCELLA NUCLEOPROTEIN (BRUCELLERGEN) AND OF HEATED BRUCELLA ORGANISMS IN SENSITIZED INDIVIDUALS*

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Human infections caused by the Brucella group of micro-organisms are reported frequently at the present time. The diagnosis is based upon laboratory tests, and the skin test is of value to determine whether the individual has been infected with one of the strains of the Brucella group of organisms. The advantages of the skin test compared with the agglutination test in diagnostic and epidemiologic procedures have been emphasized.

The agglutination test may be positive in some cases of this disease, although the test is often negative throughout the course of the infection. Agglutinins have not been demonstrated in all cases in which the organism has been isolated from the blood stream. Therefore, a negative agglutination test does not exclude the possibility of Brucella infection.

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The skin test is a more efficient procedure for the determination of the prevalence of Brucella infections in epidemiologic investigations. Keller, Pharris and Gaub[1] have shown that in a group of 1,247 individuals 60, or 4.8 per cent, had positive skin tests with 0.1 c. c. of brucellergen as compared with 1.0 per cent of the same group who gave positive agglutination reactions. Huddleson, Munger, Gould and Paulson[2] have shown that of 845 individuals who gave positive skin reactions with brucellergen only 111, or 13.1 per cent, showed positive agglutination reactions by the rapid method. If only the agglutination test had been used, a majority of infected persons would not have been detected.

The reactions of various substances injected intracutaneously to determine a state of allergy to Brucella infection have been described. In 1918, Fleischner and Meyer[3] showed that the intracutaneous injection of broth cultures of *Brucella abortus* into infected guinea pigs would produce local skin reactions. Several investigators since that time have used filtrates of broth cultures, dead bacterial suspensions, fat-free filtrates, and suspensoids of nucleoprotein (brucellergen)[4] for skin testing purposes. It has been demonstrated that each of these substances caused specific reactions in infected persons.

Of the various antigens used recently the dead bacterial suspension and nucleoprotein suspensoid (described by Hershey[5]) have been employed most frequently as skin testing agents. Both of these produce positive reactions in infected persons, which indicates a state of allergy as a result of Brucella infection. The intracutaneous injection of dead Brucella cells, however, produces in sensitized persons reactions which are usually severe and which are often associated with necrosis of tissue and abscess formation at the site of injection. The number of organisms used in a skin test dose has varied greatly; some investigators have given as large as 200 million or more organisms for this purpose.[6]

The intracutaneous injection of the nucleoprotein fraction of Brucella cells (brucellergen) results very seldom in necrosis. Systemic reactions and localized lymphangitis may occur occasionally in hypersensitive individuals. The dose of this material is usually 0.1 c. c. of a 1:2,000 dilution and is said to contain approximately 0.000015 gram of nitrogen.[4] Recently the dose of brucellergen recommended for rou-

tine skin testing has been changed to 0.1 c. c. of a 1:12,000 dilution.*

It is desirable in making the skin tests that the amount of the substance injected be large enough to produce reactions sufficiently characteristic to make accurate interpretations, but not so large as to produce unnecessary local and general reactions with necrosis of tissue. Studies to determine the minimum dose of Brucella nucleoprotein which will produce positive skin tests have been reported by Huddleson, Munger, Gould and Paulson.[2] It was shown that in a group of 185 sensitive individuals tested with a 1:2,000 dilution of brucellergen all gave a positive response; that of 114 of the same persons tested with a 1:10,000 concentration 110, or 96.5 per cent, gave a positive reaction; that with a dilution of 1:25,000, 96 per cent of 125 individuals tested were positive; and that in the case of a 1:50,000 concentration, 89.9 per cent of 54 infected persons showed positive tests. The authors state that a 1:2,000 dilution should be used for diagnostic and epidemiological purposes.

Studies of a similar nature using killed Brucella cells to determine the minimal dose given intracutaneously which will cause a positive reaction in sensitized persons have not been reported. With such information it would be possible to reduce the discomfort of large, severe local reactions in sensitized persons, and it should result in a more accurate interpretation because of the smaller amount of bacterial protein injected. It would be desirable also to compare positive skin reactions produced by small doses of brucellergen and of dead Brucella cells, particularly in relation to local and general manifestations.

A study was made in 1936 of the prevalence of Brucella infection in a local institution. It was found that of 630 patients 83, or 13.2 per cent, gave positive reactions with 0.1 c. c. of a 1:2,000 dilution of brucellergen. The patients varied in age from 10 to 45 years. The milk used in the institution was consumed in the raw state. It was known that in the herd from which the milk was obtained, although specific tests had not been made, abortion occurred frequently.

In a study of the reactions following the use of small amounts of Brucella antigens injected intracutaneously, it was possible to test 76 of the 83 sensitive patients who were still available in the institution two years after the original tests were made. For this purpose 0.1 c. c. of a 1:10,000 concentration of brucellergen or nucleoprotein derivative was injected into the skin of the flexor surface of one forearm. Into the skin of the other forearm 0.01 c. c. of Brucella vaccine containing approximately six billion dead organisms per c. c. was injected. The vaccine used for this purpose was secured from the same commercial source* as that used by Angle and his associates[7] in a similar study and was made up of 50 per cent *Brucella abortus* and 50 per cent *Brucella suis*. The dose of dead organisms injected intracutaneously corresponded approximately to 60 million instead of 200 million or more which were used by Angle and others.

The skin tests were read 48 hours after the injections. Measurements in millimeters in two diameters at right angles were made on each arm. While all grades of reactions were recorded, only those showing induration and edema of at least 10 mm. in either diameter were regarded positive. This is at variance with the interpretation of some investigators who consider reactions associated with edema and infiltration of 5 mm. in diameter as positive.

In addition a group of 48 persons not previously tested were given similar tests the same day on which the persons previously known to have been infected were tested.

RESULTS IN PREVIOUSLY POSITIVE CASES

Of the 76 persons who were known to have been infected two years previously and who were tested as described, 73, or 96 per cent, showed positive reactions following the injection intracutaneously of 0.1 c. c. of 1:10,000 dilution of brucellergen. These 73 persons and one other, or 97 per cent of the group, showed positive tests when injected with approximately 60 million dead Brucella cells. This indicates that from the point of view of demonstrating a state of allergy to Brucella protein the two substances produced practically similar results, though with the vaccine one person in whom the test with brucellergen was negative developed a positive test. In the three persons whose skin tests had been positive with a 1:2,000 dilution of brucellergen two years before but whose recent tests were negative, two had very mild and one a moderately severe reaction on the previous tests. The one person who showed negative to brucellergen but positive with vaccine had a very mild

*Personal communication to the author from Dr. I. F. Huddleson.

*Jensen-Salsbery Laboratories.

positive reaction with brucellergen on the original test. These data agree with those of Huddleson and his associates, who found that of 103 infected persons retested after five months only three failed to react to brucellergen.

Observations were made concerning necrosis of tissue at the site of injection with each antigen and also the number of persons who developed systemic manifestations such as fever, chills and general malaise. The size of the skin reaction from brucellergen and also dead Brucella cells was essentially the same in each individual except for an occasional moderate or marked difference in size between the skin reactions of the two antigens. The average size of the areas of induration and edema in two diameters for brucellergen was 36x44 mm. and for Brucella vaccine 32x40 mm.

Table 1 shows a comparison of the positive skin reactions obtained with the two Brucella antigens. This tabulation is based on the area of induration and edema of each reaction measured across the greatest diameters. This series of comparative tests showed a greater per cent of patients with reactions measuring less than 50 mm. in diameter from dead Brucella cells than from brucellergen.

The injection of brucellergen produced vesiculation with subsequent necrosis and superficial ulceration of the skin in only one individual. In that case the reaction measured 65x100 mm. In this individual the reaction produced with Brucella vaccine measured 45x70 mm. and there was no necrosis of the skin. The injection of vaccine produced at the site of inoculation vesiculation, necrosis and ulceration of the skin of slight to moderate degree in seven, or 9.5 per cent, of those reacting to that antigen. In none of these patients was there an abscess formation. Abscess formation, however, may occur following intracutaneous injections of 60 million dead Brucella cells. This has been observed recently in a patient ill from chronic brucellosis.

Table 1

SKIN REACTIONS RESULTING FROM INTRACUTANEOUS INJECTIONS OF 1.0 C. C. OF A 1:10,000 DILUTION OF BRUCELLERGEN AND OF APPROXIMATELY 60 MILLION DEAD BRUCELLA CELLS

Local Skin Reaction in 48 Hours. Size in mm. in Greatest Diameter	Brucellergen 0.1 c. c. 1:10,000 Dilution		Approximately 60 Million Dead Brucella Cells	
	Number	Per Cent	Number	Per Cent
10-25	14	19.2	16	21.6
25-50	36	49.3	43	58.0
50-75	19	26.0	14	18.9
75 and over	4	5.5	1	1.5
Total	73	100.0	74	100.0

The necrosis of skin following the intracutaneous injection of Brucella vaccine apparently does not depend on the size of the reaction. In only two of the seven patients who developed ulceration of the skin were the reactions greater than 55 mm. in the greatest diameter. Four of the patients had reactions less than 55 mm. and in one patient the reaction measured only 15x15 mm.

Only three of the patients in this group developed systemic manifestations. The skin reactions with both antigens were comparable in size in each instance. All three measured less than 55 mm. in the greatest diameter. In one instance the reaction measured 15x17 mm. As in the case with the local reactions, systemic reactions indicative of a state of hypersensitiveness to these substances did not depend on the size of the local reaction.

It is possible to obtain accurate readings in sensitized individuals with smaller doses than were used in the present series. A patient who had recovered from brucellosis about 18 months previously was recently tested by injecting intracutaneously 0.05 c. c. of a 1:10,000 concentration of brucellergen and 0.005 c. c. of heat-killed Brucella organisms (approximately 30 million bacteria) which produced characteristic and comparable positive reactions.

RESULTS IN PERSONS NOT PREVIOUSLY TESTED

A control group was used to compare with the known infected patients. Forty-eight patients in the same institution whose status relative to Brucella was not known were selected. The same substances were injected intracutaneously at the time the infected persons were tested. It was not known how long the members of this group had lived in the institution. It was found that 38 of the 48 patients developed no skin reactions to either 0.1 c. c. of a 1:10,000 dilution or 60 million dead Brucella cells injected intracutaneously. Of the 10 patients who developed positive reactions, all were positive with both brucellergen and Brucella vaccine. The size of the positive reactions were comparable

in each case, most of them being mild reactions and only one measured as much as 45 mm. in the greatest diameter.

In a recent study, Angle[7] reported observations made on 163 patients residing in institutions in the vicinity of Kansas City, Kansas. Each of these patients was injected intracutaneously with 0.1 c. c. of a 1:10,000 dilution of brucellergen and with 0.04 c. c. of Brucella vaccine containing approximately six billion Brucellae killed by heat. Angle's results show that more severe reactions were obtained with the vaccine than with brucellergen. The dose of vaccine injected intracutaneously was four times as large as that used in this group of 76 known infected patients who were tested in a similar manner.

It would appear that the dose of 60 million dead organisms is sufficient to demonstrate accurately a state of allergy to Brucella protein. The severe skin reactions obtained by other investigators may have resulted from the use of too large a dose of Brucella organisms. It should be pointed out also that with a small dose of bacteria nonspecific skin reactions can be reduced so that the results may be interpreted more accurately.

DISCUSSION

The results obtained in this series of patients infected with organisms of the Brucella group should be of interest not only to those engaged in epidemiological investigations, but also to physicians engaged in practice, because of the fact that the majority of investigators have reported marked reactions from the use of Brucella vaccine as a skin testing agent. Most of the reports state that the number of dead organisms injected intracutaneously is usually at least 200 million. In some instances a larger number of bacteria have been injected into the skin.

The skin reactions in the group of patients previously known to be allergic to Brucella protein were characteristic of the reactions observed by the author in other studies and reported by other investigators who used similar antigens in larger doses. If larger doses of brucellergen and heat-killed organisms had been given to the members of this group it is probable that more severe local and systemic reactions would have resulted, especially with the use of Brucella vaccine.

It seems clear that for routine diagnostic or epidemiological purposes these antigens used in the amounts stated should give satisfactory results. Larger doses of these substances should be administered only to persons in which skin tests are negative following the use of smaller amounts of these antigens.

SUMMARY

(1) Seventy-six patients known to have been allergic to Brucella protein two years previously were retested intracutaneously with small amounts of Brucella antigens.

(2) The tests were made simultaneously with 0.1 c. c. of a 1:10,000 concentration of brucellergen (nucleoprotein suspensoid) and with approximately 60 million heat-killed Brucella cells. The dead bacteria were secured from a Brucella vaccine consisting of 50 per cent *Brucella abortus* and 50 per cent *Brucella suis*.

(3) Of the 76 patients, 73, or 96 per cent, showed positive reactions resulting from the injection of brucellergen, and 74, or 97 per cent, gave positive reactions following the injection of dead Brucella organisms. Of the three patients who gave negative reactions two were negative to both brucellergen and dead bacteria, while the other was negative with brucellergen and positive with the vaccine.

(4) Local reactions approximately equal in size were observed following the use of each antigen. The average area of edema and induration with brucellergen was 36x44 mm. in diameter, while the average area of reaction following the injection of vaccine was 32x40 mm. in diameter.

(5) Only one patient injected with brucellergen and seven receiving Brucella vaccine developed vesiculation of the skin at the site of injection with subsequent superficial ulceration. Abscess formation did not occur in any of these individuals. Abscess formation, however, may occur occasionally as a result of the injection of small doses of Brucella vaccine.

(6) There was no correlation between the size of the local reaction and the occurrence of necrosis in the area injected with vaccine, although only seven cases were observed. In the seven cases in which necrosis occurred after vaccine injection the size of the areas of local skin reaction varied from 25x25 mm. to 44x52 mm.

(7) Systemic manifestations were observed in only three patients. The local skin reactions in them varied from 15x17 mm. to 35x53 mm. in the greatest diameters.

(8) As a control group with which to compare the allergic individuals, 48 patients in the

same institution were tested with the same antigens. Of that group 38 were negative to both materials and 10 developed positive reactions to both substances.

CONCLUSIONS

Sensitivity to the Brucella group of organisms may be demonstrated satisfactorily with relatively smaller amounts of Brucella antigens than are usually employed for this purpose. The substances employed in this series of patients caused undesirable systemic reactions infrequently. Severe local skin manifestations, especially with heated Brucella organisms, were not generally observed.

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THERAPEUTIC EFFECTS OF AMINOPHYLLIN IN ASTHMA*

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and

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Intractable asthma, sometimes called *status asthmaticus*, is sufficiently frequent in occurrence and baffling to treatment to justify every inquiry into the efficiency of any suggested therapeutic agent. From time to time recently articles have appeared in medical literature designed to show the effectiveness of aminophyllin in the relief of the acute distress of intractable asthma.[1 2 3 4 5 6] No large series of cases has been reported and the mechanism of the aminophyllin effect is not understood.

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Aminophyllin, or theophylline with ethylenediamine, is a double salt of theophylline. It is one of the three clinically valuable zanthines. It is employed in doses from 0.24 to 0.48 gram, dissolved in 10-20 c. c. of salt or glucose solution. It is injected slowly to avoid unpleasant reactions. A correlation has been shown to exist between the elevation of venous and intrathecal pressures in cardiac failure, and, after the injection of aminophyllin into the blood stream, a decline in these pressures has been noted with improvement in dyspnea and the disappearance of Cheyne-Stokes breathing.[1] In cases of asthma treated with aminophyllin, relief of symptoms has been associated usually with marked improvement in vital capacity.

In 1937, the Council on Pharmacy and Chemistry declared:

> "The therapeutic claims for all accepted products of aminophyllin should be restricted to those recommending it for its diuretic effect, and as a myocardial stimulant. The Council is of the opinion that there is no satisfactory evidence to show that aminophyllin or other known theophylline preparation acts as a dilator of the coronary arteries or has appreciable effect in reducing the pain of angina pectoris."

It has recently reiterated this position, again completely ignoring the influence of all theophylline preparations in bronchial obstruction. Under these circumstances it seems important to search for further evidence concerning the effect of this drug in the management of intractable asthma.

We have assembled the results of aminophyllin therapy in thirty-one patients treated recently for acute respiratory distress of asthmatic origin in the Immunology Clinic and in the hospitals of the Medical College of Virginia. All of these patients were given cautiously from 0.24 to 0.48 gram of aminophyllin in 10-20 c. c. of salt or glucose solution intravenously. In several instances the same patient was treated both in the hospital and in the clinic, and repeated doses of aminophyllin were given the same patient on a number of occasions.

Twenty-nine per cent of our thirty-one patients experienced at one time or another complete relief, 51.6 per cent experienced moderate relief, 9.6 per cent slight relief. Results were not constant, a patient experiencing complete relief on one occasion might show no improvement at all in his dyspnea when given the same dose on another occasion. Thirty-five per cent of our patients experienced no relief at all. Of the 59 injections given our thirty-one patients, 3 per cent were followed by slight relief, 42.3 per

Table 1

SUMMARY OF CLINIC AND HOSPITAL CASES

Patients	Sex	Diagnosis	Dosage of Aminophyllin Gram	c. c.	Effect: Not Noted	Slight	Moderate	Excellent	None
1	F	I.A.	0.48	20				+	
2	F	E.A.	0.48	20				+	
			0.48	20			+		
3	F	E.A.	0.24	10	+				
4	F	E.A.	0.24	10	+				
5	M	U.	?	?			+		
			0.24	10			+		
			0.24	10					+
6	M	I.A.	0.48	20			+		
			0.48	20					+
7	F	E.A.	?	?			+		
			0.24	10			+		
			0.24	10				+	
			0.24	10				+	
8	F	E.A.	0.24	10				+	
			0.24	10				+	
			?	?			+		
9	M	U.	0.24	10					+
			?	?					+
			0.24	10					+
			0.24	10					+
10	F	U.	0.24	10			+		
			0.48	20			+		
			0.48	20			+		
			?	?			+		
			0.24	10			+		
			?	?			+		
			?	?			+		
11	M	E.A.	0.48	20			+		
12	F	U.	0.24	10	+				
13	F	I.A.	0.24	10			+		
			0.24	10			+		
			0.24	10			+		
			0.24	10	+				
14	F	E.A.	0.24	10			+		
15	F	U.	0.48	20					+
16	M	U.	0.48	20			+		
			0.24	10				+	
17	M	E.A.	0.24	10			+		
			0.24	10				+	
18	F	E.A.	0.24	10			+		
19	F	U.	0.24	10			+		
20	F	U.	0.24	10			+		
			0.24	10					+
21	F	U.	0.24	10					+
22	M	E.A.	0.24	10					+
			0.48	20					+
23	M	I.A.	0.24	10			+		
24	F	E.A.	0.24	10		+			
25	F	E.A.	0.24	10				+	
			0.24	10				+	
26	F	U.	?	?					+
27	M	U.	0.24	10				+	
			0.24	10					+
28	F	U.	0.24	10					+
29	F	U.	0.24	10					+
30	F	U.	0.24	10				+	
			0.24	10				+	
31	M	U.	0.48	20		+			
					4	2	25	13	15

I. A. = Intrinsic asthma. E. A. = Extrinsic asthma. U = Unclassified asthma.

cent by moderate relief, 22 per cent by complete relief. In 25.4 per cent of cases there was no relief at all.

Table 2

EFFECT OF AMINOPHYLLIN ON PAROXYSMS OF ASTHMA

	Uncertain	Slight	Moderate	Excellent	None
No. cases	4	2	16*	9*	11
Per cent	19.2	9.6	51.6	29	35.5
No. injections	4	2	25	13	15
Per cent	6	3	42.3	22	25.4

*Slight discrepancy in figures due to inconstancy of results.

The effects of aminophyllin given intravenously were not always proportionate to the size of the dose. Although there were 25 per cent of failures when 0.48 gram were given and 31.4 per cent when 0.24 gram were given, complete relief was experienced by 28.5 per cent of those patients receiving the smaller dose, while only 16 per cent were equally improved by the larger dose.

Table 3

INFLUENCE OF DOSE ON AMINOPHYLLIN EFFECT DURING PAROXYSMS OF ASTHMA

Dose Gram	Injections	Slight	Moderate	Excellent	None
0.48	Number	1	6	2	3
	Per cent	8.3	50	16	25
0.24	Number	1	13	10	11
	Per cent	3	37.1	28.5	31.4

Comment.—In our experience aminophyllin is a valuable drug in the treatment of intractable asthma. Seventy-five out of every one hundred injections gave relief, often immediate and complete. In some instances relief was slow in appearing. In other instances it was transitory. On the whole, we experienced results as favorable from 0.24 as from 0.48 gram. We encountered no unfavorable reactions. Our experience confirmed the observation made by others that epinephrine-fast cases frequently respond to aminophyllin, while on the other hand cases of intractable asthma are favorably influenced by epinephrine after failure with aminophyllin.

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THE RELATIONSHIP OF PERSONALITY CHANGES TO FACIAL NEURALGIA*

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The conception of a total personality acting as a unit with a physiology and a pathology of its own is not new, but has only recently been widely adopted. Personality diseases are now described and defined without consideration of mind or body, but as belonging to a new unit construed from many more elementary units, of which body or soma is merely one. The effect of certain somatic disorders, certain toxins, or certain types of thinking on the personality is frequently an object of consideration; as, for instance, somatic changes in the organic psychoses, the effect of poisons in the toxic psychoses, and, as an example of the effect of thinking on the personality, the compulsion neuroses. On the other hand, the study of the total personality for the purpose of interpreting somatic diseases is something of an unusual approach. The idea that the total reaction to inner and outer environment could give a clue in differential diagnosis is one used quite often by the diagnostician, but rarely voiced in the description of his diagnostic methods. He feels or senses that a certain person would or would not have a certain disorder; that he does not act as if he had a brain tumor; that he is the wrong type of person to have heart disease. These and similar remarks are often heard, but their value is rarely checked, nor is the source of the impression the remarks indicate sufficiently investigated.

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Draper,[1] with many others, has shown the significance of body build, while Kretschmer[2] has indicated certain personality types that help in the understanding of the patient, as well as in the diagnosing of the disease. These writers have shown that a study of the whole might lead to a better understanding of the part disorder; yet, their approach is general, so cannot be applied to an individual disease. The total reaction in any disease should have an effect on the disease picture and, in spite of the fact that individuals vary, the person reaction in that disease should have characteristics of diagnostic value.

In 1932, one of us[3] attempted to apply this approach to the atypical facial neuralgia described by Frazier in 1924, as it seemed to us that the pain of the neuralgia was in part, at least, a somatic symbol of a personality reaction having a recognizable characteristic, namely, a suppressed conflict, which gave shameful emotions. The personality of the patient with atypical neuralgia was described as very sensitive, very egotistical and self-centered. A sublimation of underlying feelings of inferiority was thought to be helped by this pain which had a similar defense value to that exercised by a paranoid delusion. This approach has not been employed since, but each author discussing these neuralgias stresses the difference in the type of facial pain and inadvertently suggests that different types of persons will have different types of facial pain. In 1932, Fay[4] indicated the transmission of the pain in atypical neuralgia through the sympathetics and vagus. He described three pain mechanisms, feeling that the difference in result was due to the different nerves involved. Fay felt that tenderness to pressure over the arterial branches to the head and neck accompanied by pain behind the eye, as well as a persistent aniscoria, differentiated the atypical neuralgia from other types. In 1938 Glaser and Burman[5] reported a study of 200 cases of atypical facial neuralgia. They sought to differentiate the true tic of trigeminal origin from the atypical type of pain by the following characteristics: the tic douloureux or true trigeminal neuralgia was found equally in males and females, while the atypical occurred predominantly in females. In the typical neuralgia the pain was unilateral, in persons over 35, in the trigeminal area, intermittent but severe, superficial and characterized by trigger zones and by no tenderness over the carotid. The pain in the atypical was deep, continuous, without trigger zones and accompanied by tenderness over the carotid.

Levy and Grant[6] studied cases of major trigeminal neuralgia in 1938. They found changes in sensibility which suggested thalamic lesions; they demonstrated cortical atrophy in the encephalogram and, finally, foci of softening in the thalamic region in six autopsied cases, suggesting that the pain of tic douloureux was central in origin. They made an anthropologic survey of forty cases. The patients with tic fell into the short thick type. The women showed a masculine expression, the men a feminine type of pelvis. The habitus of the patient with typical trigeminal neuralgia was different, even the reverse of that of persons suffering from so-called facial neuralgia. In their mental make-up the trigeminal cases were extrovertive, sociable, talkative, busy and good humored. After the attack they forgot the pain; they had paraesthesias, but did not notice them, while the atypical cases pondered over them, making life unhappy for themselves and for others. Finally, these authors state that neurologists and neurosurgeons have an intuitive, yet distinct feeling, for the type of person who probably will or will not be benefited by section of the fifth nerve.

Impressed by the repeated suggestion of personality value in the differential diagnosis of facial pain, and led on by the findings of these other workers, the authors decided to approach a series of facial neuralgias from the personality standpoint. Why was the person with one type of facial pain so different from the person with the other? On what was this instinctive impression based?

Frazier,[7] in 1923, classified the neuralgias of the face as follows: first, neuralgia due to infection of teeth and sinuses; second, post-herpetic neuralgias; third, neuralgias due to tumors of the Gasserian ganglion; fourth, painful phenomena of the face which are associated with hemicrania or migraine; fifth, atypical facial neuralgia; and sixth, major trigeminal neuralgia. Since this classification, the glossopharyngeal neuralgia has been better defined; also, the syndrome of the geniculate ganglion has been further emphasized. In 1939, Hyndman[8] claimed that sympathectomy would relieve post-herpetic neuralgia, and in April, 1939, Horton, McLean and Craig[9] reported a new syndrome of vascular headache, a condition apparently very similar to migraine headaches, but, also, suggestive of atypical facial neuralgia, as carotidynia is present

and there is a constant boring burning pain in the eye, the temple, the neck, and often the face. The paroxysms of pain, however, appear and disappear quickly, although they may last from fifteen minutes to a half hour.

A new classification of facial neuralgia, however, can be made by regrouping them by means of the type of pain. This is shown in *Table 1.*

Table 1

I. Major Neuralgia
   (1) Trigeminal
   (2) Glossopharyngeal

II. Atypical Neuralgia
   (1) Sphenopalatine, Sluder
   (2) Atypical, Frazier
   (3) Geniculate, Ramsey Hunt
   (4) Sympathetic and Vagus, Fay
   (5) Vascular headache, Horton, *et al.*

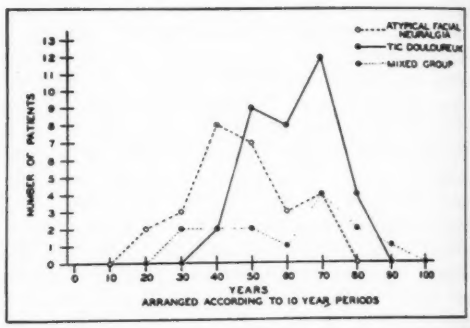
III. Infectious or Mixed

In the first group are placed the true major neuralgias characterized by their superficial location, their paroxysmal nature, and their tendency to recur. In this group the major trigeminal and glossopharyngeal neuralgias are placed. In the second place must be all those various sorts of pain about the face that occur on one or both sides; that are deep, constant and continuous; that radiate across the face and down into the neck. The type described by Sluder would be placed here, the atypical of Frazier and Glaser, the geniculate of Ramsey Hunt and, perhaps, the vascular type of headache described by Horton, McLean and Craig. This polyglot of neuralgias is represented by symptoms similar to such a degree that they can be grouped together as the atypical facial neuralgias. The third group contains the neuralgias accompanying infection. The pain is throbbing and constant, but disappears with the infection. The pain with herpes must be placed here, as it is a result of infection, although many of the characteristics of this neuralgia suggest those of the second grouping.

With this new classification of the neuralgias in mind, the records of seventy-six patients with the various forms of facial neuralgia were scrutinized for personality responses of differential significance. An effort was made to make the study as objective as possible by using only data recorded and containing descriptive value sufficient to be estimated quantitatively as well as qualitatively. The impressions of the recording physician or nurse are subject to error, but the total series was thus subject to the same chance. Also more objective data such as abnormal behavior on the part of the patient frequently seconded the impression. First, the more or less somatic characteristics of the three groups were contrasted such as age, sex and complicating somatic disease. Next, the personality responses before, during and after the neuralgia were estimated and, finally, the effect of their situation in life considered.

There were seventy-six patients studied. Twenty-seven were of the atypical type; thirty-five with tic douloureux, and fourteen put in the infectious or mixed group. It was at once learned that the atypical neuralgias were found in younger individuals. Some of the cases were in their twenties, while 50 per cent of them were between 32 and 48 years of age. The average age was 40.7 years. This is shown in *Table 2.*

Table 2


ATYPICAL FACIAL NEURALGIA
TIC DOULOUREUX
MIXED GROUP
NUMBER OF PATIENTS
0 1 2 3 4 5 6 7 8 9 10 11 12 13
0 10 20 30 40 50 60 70 80 90 100
YEARS
ARRANGED ACCORDING TO 10 YEAR PERIODS

The true neuralgias spread over a much wider range. The youngest case was 36, but the oldest was 82 years of age, the average age 57.1, while the average age of the infectious group was 55 years. The fact that the latter groups are much older suggested immediately that senile changes might produce behavior difficulties. There were twenty-two females and five males in the atypical group and nineteen females among thirty-five cases with tic, while the members of the third class were divided equally; again showing the preponderance of women amongst patients with atypical neuralgia.

Levy and Grant, when discussing their cases of trigeminal neuralgia, noted that quite a number suffered from arteriosclerosis, hypertension and heart disease. In our series the findings were the same. Twenty-nine of the thirty-five cases showed some organic disturbance which was usually of the cardiovascular character.

Arthritis was quite common. Twenty-four of the atypical cases showed some somatic disturbance, but these were usually closely related to the disorder. There were sinus trouble, bad teeth and other similar disturbances. Pelvic operations for presumed pathological conditions in this region were frequent; among the mixed or infectious group foci of infection were common; and even in the herpes cases other somatic disorders were present.

The personality responses in relation to the disease was the next topic of study. An effort was made to estimate in as quantitative a manner as possible the type of person before the onset of the disease, the manner of reaction to the neuralgia, and, finally, the degree of abnormality associated with the total personality reaction during and after treatment. In an effort to simplify the presentation, the results of the studies are presented in *Tables 3, 4* and *5*.

Table 3

ATYPICAL FACIAL NEURALGIA GROUP

Age	Personality Responses					
	Before Illness	To Complaints		Degree of Abnormality		
				Affect	Content	Organic
14	U	E+	U	3+	3+	0
16	U	M	U	—	—	—
20	S	E	U	3+	3+	—
23	U	E	U	3+	3+	0
25	U	E	U	1+	1+	0
30	U	E	U	1+	1+	0
31	U	E+	U	1+	1+	0
33	U	E+	U	3+	2+	1+
36	U	M	U	3+	3+	0
37	U	E+	U	4+	4+	0
39	U	E	U	1+	1+	0
39	S	M	R	—	—	—
39	U	E+	U	3+	3+	1+
40	S	M	R	1+	1+	0
41	S	E	R	1+	1+	0
44	S	—	—	1+	0	0
45	U	E	U	3+	3+	0
45	U	E	U	3+	3+	0
47	U	E+	U	3+	2+	0
48	S	E	U	2+	2+	0
50	S	M	R	1+	1+	0
51	S	E	U	3+	3+	0
55	S	E	U	1+	1+	0
60	U	S	R	1+	1+	1+
65	U	E	U	1+	2+	0
69	U	E	U	1+	2+	2+
69	S	E	U	1+	1+	0

Here the cases are arranged according to age and divided into the three groups. In the first column of each chart the personality before illness is estimated and presented as stable or unstable. Immediately there are marked differences, as 17, or 65 per cent, of the atypical group were considered unstable, while in the trigeminal group 24, or 68 per cent, were considered stable. In the infectious group, 64 per cent were considered stable. The high degree of instability evidenced in past histories of the patients with atypical neuralgia should color the reaction of these individuals to any disorder. If one knew the past history fully he should be able to differentiate the pain.

Table 4

TIC DOULOUREUX GROUP

Age	Personality Responses					
	Before Illness	To Complaints		Degree of Abnormality		
				Affect	Content	Organic
36	U	M	U	3+	3+	0
39	S	S	R	0	0	0
41	S	0	—	0	0	0
42	—	—	—	3+	3+	3+
44	U	M	R	1+	1+	0
45	—	—	—	—	—	—
46	U	E	U	1+	1+	1+
49	S	M	R	1+	1+	0
49	S	S	R	1+	1+	0
49	U	0	—	0	0	0
49	S	S	R	1+	1+	1+
50	U	S	R	0	0	0
52	U	E	U	1+	1+	0
54	U	S	R	1+	1+	0
56	S	M	R	1+	1+	0
57	S	M	R	0	0	0
58	S	S	R	0	0	0
58	U	E	U	1+	1+	0
59	U	M	R	1+	2+	1+
60	U	S	R	1+	1+	0
61	S	M	R	2+	3+	2+
61	S	0	—	0	0	0
62	S	0	—	1+	1+	0
62	S	M	R	0	0	0
65	S	S	R	0	0	0
65	S	S	R	2+	2+	1+
66	S	S	R	—	—	—
66	S	E	U	1+	3+	3+
68	U	M	R	2+	3+	3+
68	U	M	R	1+	1+	1+
69	S	S	R	0	0	0
70	—	E	R	1+	1+	0
72	S	—	—	1+	1+	1+
73	S	M	R	1+	1+	0
78	S	S	R	1+	1+	1+

Table 5

MIXED GROUP

Age	Personality Responses					
	Before Illness	To Complaints		Degree of Abnormality		
				Affect	Content	Organic
22	S	—	—	—	—	—
24	U	S	R	1+	0	0
35	S	S	R	—	—	—
37	U	M	R	—	—	—
40	S	S	R	—	—	—
47	S	—	—	—	—	—
52	U	M	U	—	—	—
61	S	—	—	—	—	—
63	S	E	U	1+	1+	1+
67	—	S	R	—	—	—
68	U	M	R	—	—	—
71	U	M	U	1+	1+	1+
72	S	0	—	1+	1+	1+
82	S	S	R	—	—	—

Next, the reaction to the actual illness was considered. This is charted in the third and fourth columns, where it is indicated whether the reaction was slight, moderate, exaggerated, and then an extra column is given for those that go beyond exaggeration. These degrees are denoted as 0 = none; S = slight; M = moderate; E = exaggerated, and E+ = super-exaggerated, if you wish. We find here that twenty of the atypical group had an exaggerated response, five of the major tics and one of the infectious. Following this it was considered whether the response was within the bounds of reason, and whether it was justified by facts. Here again we find the response in twenty of the twenty-six atypical cases unreasonable. This is 75 per cent. Among those with typical tics, and those with infectious neuralgia, 14 and 21 per cent, respectively, are found unreasonable. This finding is illustrated in *Table 6*.

Table 6

ABNORMAL PERSONALITY RESPONSES

Cases Showing	Instability Before Illness		Exaggerated Response to Illness		Unreasonable Complaints	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
Atypical facial neuralgia	17	62.96	20	74.07	21	77.70
Tic douloureux	12	34.28	5	14.28	5	14.28
Mixed group	5	35.70	1	7.14	3	21.40
Total	34	44.73	26	34.20	29	38.10

In the last three columns of the tables an attempt is made to estimate the degree of abnormal personality response while the patient was under observation, as well as later by follow-up. The findings in these columns are summarized and put together in percentage ratio in *Table 7*.

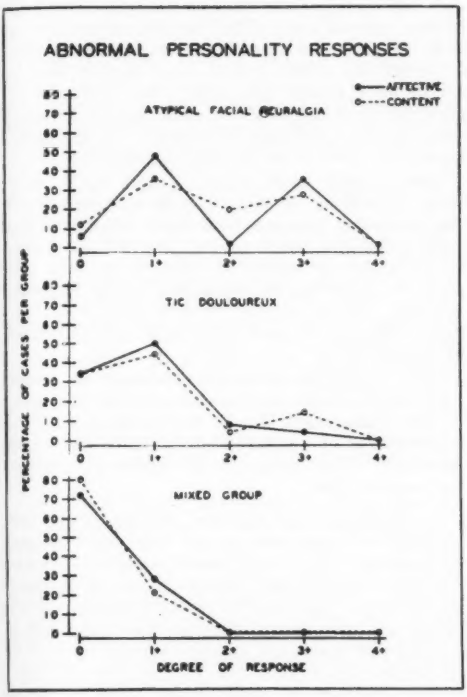
This table demonstrates that all types of neuralgia showed a mild degree of abnormal reactions, but the severe degrees of abnormality were more numerous in the atypical group. It also shows that the affective disorders are more marked in the atypical group, while the true tics are more characterized by content disorders. This latter finding is compatible with the fact that persons with trigeminal neuralgia tend to be older, so are subject to senile change. The percentage relationships of the degree of abnormal response are represented by the graphs in *Table 8*.

Table 7

PERSONALITY DISORDER RESPONSES

Type of Responses	Affect					Content				
Degrees of responses	0	1+	2+	3+	4+	0	1+	2+	3+	4+
Atypical facial neuralgia group										
Number of cases	2	13	1	10	1	3	10	5	8	1
Per cent per group	7.4	48.11	3.7	37.3	3.7	11.1	37.3	18.5	29.6	3.7
Tic douloureux group										
Number of cases	12	18	3	2	0	12	16	2	5	0
Per cent per group	34.28	51.4	8.6	5.76	0	34.28	45.7	5.76	14.28	0
Mixed group										
Number of cases	10	4	0	0	0	11	3	0	0	0
Per cent per group	71.4	28.5	0	0	0	78.5	21.4	0	0	0

Table 8



Finally, a study of the occupational status of these individuals is given in *Table 9*.

Here we find a marked contrast between the person with major trigeminal and the atypical neuralgia. Forty-eight and one-tenth per cent of the cases with atypical neuralgia are women in some type of professional work; that is, women

Table 9

OCCUPATIONAL STATUS

Groups	Professional				Non-Professional			
	Male		Female		Male		Female	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Atypical facial neuralgia	0	0	13	48.1	5	18.5	9	33.3
Tic douloureux	1	2.88	2	5.76	15	42.18	17	48.5
Mixed group	2	14.2	3	21.4	6	42.8	3	21.4
Total (percentage of series)	3	3.94	18	23.6	26	34.2	29	38.1

out in life holding a position that demands some training and education, while 90 per cent of the cases of tic douloureux are found among unskilled or non-professional people. It should be added that a large percentage of the women with atypical neuralgia are single or separated and remarried, while the seventeen non-professional women with "tic" include many housewives.

This study contrasting a series of 76 cases with facial pain has demonstrated several pertinent facts. The trigeminal cases tend to be older than those with atypical neuralgia. The men with atypical neuralgia are older than the women, but the majority of cases group themselves around the fifth decade. Next, a study of the personality responses of the groups shows the atypical group to be more unstable before the illness, tends to exaggerate their complaints beyond reason, and to show a greater number of cases with a marked degree of definite abnormal personality reactions. The abnormal reactions found among the atypical cases were more liable to have an affective coloring, while those found in the trigeminal were more often due to a disturbance in thinking. Finally, it was found that a large proportion of the cases with atypical neuralgia were unmarried women who would be classed as professionals; that is, they were teachers, stenographers, nurses, dressmakers, women on their own, facing the demands of life on the educated level. Thus it is demonstrated in a definite manner why the physician knows intuitively which cases have true trigeminal neuralgia. The past history of the atypical case gives evidence of instability such as alcoholism, inability to hold a job, and nervous breakdowns. The patient complains vigorously about this pain, yet plays bridge, goes to card parties while having severe seizures. She also tells of her pain with a smile. These findings are not true for the atypical tic or the infectious case. Next, as the patient is followed from week to week many evidences of abnormal behavior appear; paranoid ideas, ideas of persecution, drug addiction and finally definite psychosis for which the patient visits a mental hospital. The ideas of persecution would be rated on Charts 3, 4 and 5 as 1+ and 2+, drug addiction as 3+ and frank psychosis as 4+, as an effort is made to express the degree of abnormality quantitatively.

In conclusion, there is a definite relation between the total personality response and the type of facial pain. This fact is emphasized in several ways in this study. If the past history is studied for signs of instability; if the relation of the com-

plaint to the actual finding is considered; if the behavior of the person is estimated, the type of neuralgia can be determined. Undoubtedly, an estimate of the total person will help in differentiating the neuralgias of the face.

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DISCUSSION (*Abstract*)

Dr. Titus H. Harris, Galveston, Texas.—The main facts established in this study are that a certain proportion of patients complaining of facial pain have an unstable personality and that the unstable personality is much more common in those patients regarded as having atypical neuralgia than in those with true neuralgia, and the authors suggest that this point should be evaluated in establishing a diagnosis in neuralgia.

When first reading this paper, one wonders why there are not more patients showing an unstable personality in the atypical group, since we feel that we can always find other symptoms of a personality disorder in psychoneurotic and psychotic patients than the presenting symptoms. This can be understood, however, when we realize that the authors have included in the atypical group the sphenopalatines, the geniculate, the sympathetic vagus of Fay, and the vascular headache types of neuralgia. I would suggest a revision of their classification and make a fourth group; refer to personality disorders which would include only those psychoneurotic and psychotic patients with a complaint of facial pain.

The authors have pointed out the value of considering every sick person as a sick individual, and not limiting treatments to the symptoms or organ involved; yet the approach to a psychoneurotic patient is so different from that to one who has a local structural disease that I wonder if this differentiation is not sharply necessary.

For example, if we are dealing with a psychoneurotic patient whose pain in the face is only an expression of tension, then any treatment directed to the face not only will not help, but will keep the symptom present, or even make it worse. The treatment in this instance is to be directed toward the underlying cause, which is the inability of that patient to get along in life with her or his particular equipment when faced with the particular situation, or if the facial pain is a somatic symptom in a depressive psychosis, treatment should certainly be directed to the underlying psychosis.

Many other examples could be cited, but I believe these will indicate the importance of separating sharply the personality disorders from those whose symptoms are due to a local disease process. Certainly, no amount of persuasion, interpretation, analysis, or any other form of psychotherapy would help a true trigeminal neuralgia, and no amount of surgery or local treatment applied to the face would help a psychoneurosis or a psychosis.

From the facts established in this study, the authors have indicated the need of evaluating the personality of every patient regardless of the complaint, and they have given us an excellent classification of the neuralgias which will enable one to differentiate more sharply the various types.

Dr. W. de Gutierrez-Mahoney, Nashville, Tenn.—The discussion of personality changes with facial neuralgia is even more timely today when mechanical medicine through laboratory diagnosis has led us too frequently away from a consideration of the complete patient than it was when Henry Hunt, almost a hundred years ago, devoted the second chapter of his monograph on *Tic Douloureux, Sciatica and Other Neuralgic Disorders* to the "Peculiarity of Constitution." Here he admonished: "Before entering on the consideration of the local causes of tic douloureux, it is necessary to allude to a class of persons, particularly to females, in whom the natural sensibility of the nervous system is so increased as to render them peculiarly liable to neuralgic pains." In the preface of this book Hunt said: "Although the subject of the following essay has frequently enjoyed the attention of the medical profession, yet, the object of those who have written on the subject appears to have been, rather to point out the efficacy of some favorite remedy or to advocate a particular plan of treatment, than to inquire into the nature and causes of it. This has led to an empirical and ineffectual treatment, and to the consequent abuse of several powerful and valuable remedies, which have for a time been considered almost as specifics, and have soon fallen into disuse; not, indeed, before much mischief has been occasioned by the indiscriminate application of them, which in many instances, I am persuaded, has tended to increase the disease from which the tic douloureux has arisen and to render it more obstinate and incurable." Those were prophetic words which have survived the test of indiscriminate cocainization of the sphenopalatine ganglion, sympathectomy, and ill-advised division of the posterior trigeminal root.

An analysis of the newly recommended classification of facial neuralgia reveals under the subdivision *atypical neuralgia,* the geniculate of Ramsey Hunt, a virus affection which belongs more suitably under the infec-

tious group; vascular headache of Horton, McLean and Craig, a problem outside the category of facial neuralgia; the so-called sphenopalatine neuralgia of Sluder, an entity which neither Cushing nor Frazier in their extensive experiences was ever able to identify; and the autonomic ache of Fay, another very uncertain matter. Thus there remains from the broad group of atypical neuralgia of Drs. Love and Wilson the atypical neuralgia of Frazier which Dr. Wilson identified unquestionably as a psychogenic entity in his highly creditable paper of 1932.

I should plead for the continued recognition of functional pain in the face as such, and not to be confused with facial neuralgia in the strict sense, for neuralgia means pain referred along the distribution of a nerve. Functional pain is recognized by these features: a constant, deep-seated, frequently indescribable pain which fits no pattern of nerve branches, overlaps from one to another, even from side to side; is aggravated by circumstances with which the personality cannot cope adequately; the patient usually has a history of personal or familial liability to functional nervous disease of which there may be concomitant signs; the pain is not relieved by drugs, although they are usually given in increasing dosage from the coal tar derivative to the opiates, and occasionally to the point of addiction.

Is not, then, the facial discomfort of these patients in the atypical group simply one other expression of a personality disorder, just as are the instability of the same individuals, the exaggerated response (not only to discomfort, but to any situation) and the degree of abnormal personality response? Is it not a matter of not seeing the forest for the trees? And may we not do well to bear in mind the advice of Francis Anstie in his monograph on "Neuralgia" in 1872: "To understand what hypochondriac pains are, we must first be familiar with the general character of the hypochondriacal temperament, for the pains are only a subordinate and ever-varying phenomenon of the general disease."

I trust that new impetus will come from the work of Drs. Love and Wilson which will lead to the application of their formula in the study of all organic disease of the nervous sytem, not only better to appreciate the patient's illness *in toto*, but also to identify the functional from the organic whereby the correct course can be charted from the beginning for the patient's ultimate welfare.

Dr. Wilson (closing)—The approach used in this paper might well be criticised extensively. It is hard to determine under such circumstances just how much is the impression of the observing physician and how much is the impression of the interpreters of the notes in history. Also, the terms that we used such as "unreasonable" and "exaggeration" are not definite terms, so again could be criticised as giving impressions rather than giving definite information. Nevertheless, I do feel that our study was as nearly objective as possible and that the point we used to emphasize, namely, the value of an approach to a disease from the standpoint of the total personality, is well demonstrated by the study. It is also well to remember that in this study no effort was made to force results, but the findings developed automatically from the records.

THE CAUSE AND PREVENTION OF THE LOSS OF TEETH*

By C. C. Bass, M.D.
New Orleans, Louisiana

Practically all adults and also many younger persons have tooth-decay and periodontoclasia, one or both, affecting some or many of their teeth. In fact, in many instances there is more or less periodontoclasia around every tooth the individual has. Because of its insidious nature and the absence of symptoms or gross anatomic changes, the disease usually exists for a long time without its presence being recognized, either by the patient himself or by others.

It is only after the far advanced stage is reached, in which there is considerable loss of the peridental tissues and exposure of the root of the tooth, suppuration, and perhaps loosening of the tooth, that the patient recognizes that there is something the matter. He may then seek professional advice and treatment, but usually this is without successful results. The damage that has already been done, which is much greater than he ever thought, cannot be repaired. Only rarely can he find treatment and advice that prevents further progress of the disease. Usually it progresses until the tooth is finally lost. Several teeth may be affected at the same time. The grinding teeth, molars and bicuspids, are generally lost first.

Recently we have employed a technic which has not been employed heretofore for this purpose and have been enabled thereby to ascertain important facts and information relative to the early stages of the diseases from which practically all loss of teeth results. That technic consists essentially of studying freshly extracted teeth under the dissecting microscope, usually staining them promptly after they were extracted. A 1 per cent aqueous solution of safranin applied directly to the tooth has been found satisfactory for this purpose.

By studying such specimens under the dissecting microscope one is able to see the line at the cemento-enamel junction to which the soft tissues, which cover the root of the tooth, normally extend. The amount of destruction and recession of these soft tissues that has occurred is clearly seen. Even the smallest extent of re-

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cession and the very earliest stage of periodontoclasia can be recognized and identified.

With suitable delicate instruments one is able to pick very small amounts of material from different selected areas of the bacterial film on the tooth which is now densely stained and also from areas deep down within cavities. Preparations of such material can be restained by special methods, if desirable, and then studied under high magnification. In this way, one is able to gain considerable information as to the types of micro-organisms at different points relative to the lesions of either caries or periodontoclasia, and as to the tissue changes that occur as these diseases progress.

Only by staining and examining a recently extracted tooth in this way can one realize and appreciate the large quantity and nature of the bacterial film on the teeth, especially at the gum margins and in cavities. It is also very illuminating to clean off such a stained tooth with a tooth brush. The stained bacterial film is quickly and very effectively removed, but the peridental membrane, which is stained, is not removed even by vigorous brushing. It is necessary to see such a specimen under the dissecting microscope to appreciate its value.

The mass of bacteria, debris, and food particles is a source of constant irritation and, finally, inflammation and suppuration at and below the gum margins. This irritation and more or less suppuration results in gradual breaking down and receding of the tissues involved. The attachment of the peridental membrane no longer extends, as it does normally, to the line of the cemento-enamel junction. As the gum and peridental tissues recede, more and more of the neck and root of the tooth is exposed, and the tooth appears to be growing longer.

The early stages of periodontoclasia are not recognized by the patient or by the average dentist at the present time. They do recognize and sometimes concern themselves with the advanced stages of the disease, but the damage has already been done then. Very little or no restoration of the tissues that have been lost is possible. However, further progress of the disease may be prevented if proper preventive measures are followed. Unfortunately, few people now ever get the necessary instruction and advice as to how and when to clean their teeth to prevent both decay and periodontoclasia.

Caries.—Dental caries is due entirely to bacterial decomposition of food which lodges and may be retained in crevices and other favorable places on and between the teeth. Carbohydrate food (particles and in solution) affords favorable culture media for aciduric bacteria, of which many kinds and varieties are present in every person's mouth.

As the bacteria multiply, and the food in which they are growing breaks down, acids are produced which, if in sufficient concentration, gradually decalcify the tooth structure with which they are continuously in contact. Lactic acid is one of those produced most regularly and most abundantly in this way; and it is one of the most effective decalcifiers.

As an area on a tooth, however small, is decalcified or softened, it then becomes vulnerable to the invasion of other bacteria by which it is gradually broken down. After a cavity starts, it then offers a still more favorable place for the lodgment, retention and aciduric decomposition of food. Thus, dental caries progresses until it reaches the pulp canal into which bacterial invasion proceeds rapidly. The tooth is devitalized and is finally lost after weeks, months, or years, of deep-seated infection not only of the tooth itself, but of the tissues surrounding the root. But this is the far advanced stage of a disease of long duration and it is usually too late to do anything for it except to sacrifice the tooth. This is the only stage, however, about which the physician concerns himself. How much better it would be for him to concern himself with the earlier stages of the disease and demand, or see to it, that his patient has the necessary instruction and advice to prevent the disease.

After cavities have developed, they may be filled, but this is a very poor kind of health service if the patient does not receive, at the same time, the necessary instruction and advice to prevent the continuation of the conditions which cause tooth decay.

The various aciduric bacteria produce acids when grown in favorable media in the test tube or in carbohydrate food material, in the mouth only, however, after incubation for a sufficient length of time. In bacteriologic laboratory practice, cultures are usually incubated for forty-eight hours, and sometimes several days, before readings of acid and gas production are taken. Very little acidity develops within the first twenty-four hours. This tells us that if food is not retained in the mouth longer than this, little damage to the tooth could occur from acid decomposition.

If all food is cleaned from the teeth and

mouth at night before retiring, there follows a considerable period of time before the next food is taken. Moreover, the length of time from the next morning meal until the same time for cleaning the teeth again at night before retiring is too short for any considerable acidity to be produced. Therefore, all that is necessary to prevent caries is to clean the teeth and mouth of all food at night before retiring. If done at that time, it is absolutely unnecessary to do it at any other time of day.

Periodontoclasia.—The same bacteriologic principles apply in prevention of periodontoclasia as in caries. Food particles, debris, and the mass of bacteria which accumulates at the gum margin and tends to build up and extend down into the gingival crevice and cause periodontoclasia must be removed at night before retiring. There follows a considerable period of no irritation of the tissues from this cause and rapid healing or recovery from the harm that may have been done during the previous few hours when this material was accumulating and increasing. This material is present mostly between the teeth. If it is removed every night before retiring, it is absolutely unnecessary to do it at any other time of day.

Method of Cleaning the Teeth.—The three exposed surfaces of the crowns of the teeth can be cleaned well, easily and quickly by brushing them with the tooth brush. No amount or method of brushing can clean the two proximal surfaces of the teeth and the spaces between them. This can be done only by the proper use of dental floss. A piece of floss must be passed gently between the teeth, endeavoring at the same time to draw it diagonally over the proximal sides of each tooth. This dislodges the food particles and debris from the space and the bacterial film adhering to the sides of the tooth. Vigorous rinsing by forcing water back and forth between the teeth removes loosened particles and food in solution and completes the job. It is necessary to clean every tooth each night in the way indicated. Nothing else whatever is necessary to prevent the occurrence or further progress of periodontoclasia.

SUMMARY

(1) The diseases, dental caries and periodontoclasia, from which practically all loss of teeth occurs, are present and active in most people.

(2) Dental decay is due to the harmful effects of acids produced by bacterial decomposition of food which is retained on and between the teeth.

(3) Periodontoclasia is due to the irritation and inflammation caused by the accumulation and retention of food particles, debris, and mass of bacteria at the gum margin and in the gingival crevice.

(4) These diseases can be entirely prevented and further progress of existing disease can be stopped by properly cleaning the teeth at night before retiring.

(5) The teeth can be effectively cleaned by brushing and the proper use of dental floss, followed by rinsing. They cannot be cleaned in any other way.

THE BIRTH AND EARLY HISTORY OF THE SOUTHERN MEDICAL ASSOCIATION*

By JERE L. CROOK, M.D.†
Jackson, Tennessee
and
WALTER W. CRAWFORD, M.D.†
Hattiesburg, Mississippi

The evolution of American medicine has been colored by the thinking of the medical profession of the South since the early Colonial days. Increase in population brought its added quota of physicians, and the organization of these into an ethical group resulted in a national organization, the American Medical Association. The expansion of the American Medical Association reached a point where the individual as well as community lost his identity in the cosmic mass.

There was a growing feeling among men of the Southern group of states that a Southern Medical Association should be organized. This idea was not due entirely to a lack of recognition of the men of the South in the national organization, but rather to the desire for the more intimate study of some of the problems of Southern medicine as well as the opportunity for closer fellowship among this smaller group at its annual meetings. This concept was crystallized in a meeting of the Nashville Academy of Medicine in 1906. Dr. Giles C. Savage, President of the Tennessee State Medical Association, was named chairman of a committee to communicate with the presidents of the state associations of Louisiana, Mississippi, Alabama, Georgia and

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†Past Presidents of the Southern Medical Association, respectively, in 1921 and 1910.

Florida, and to ask them to send delegates to meet with the Tri-State Society of Alabama, Tennessee and Georgia at its October meeting in Chattanooga in 1906. In order to amplify the records, one of these letters is quoted in full:

G. C. SAVAGE, M.D.
137 Eighth Avenue, North
Nashville, Tennessee, August 10, 1906.

Dr. W. W. Crawford, President,
Mississippi State Medical Association,
Hattiesburg, Mississippi.

Dear Doctor:

We write you as President of your State Association concerning the organization of a Southeastern District Branch of the American Medical Association, to include the following states: Tennessee, Georgia, Alabama, Florida, Mississippi and Louisiana, and probably Kentucky, though it now appears to us that Kentucky might wish to enter into the formation of a District Branch with the states immediately north of her. You have doubtless read in the Journal of the Association that the Southwestern District Branch of the American Medical Association had practically been organized, including Kansas, Arkansas, Oklahoma and Texas. Last night in the Nashville Academy of Medicine, we discussed the matter extensively, and there was not a dissenting voice when the vote was taken to appoint the undersigned a committee to correspond with yourself and others, presidents of their respective associations. We were directed by the resolution to call a meeting of representatives of the six or seven associations named above, at Chattanooga on October 2 of the present year, with a view of taking the first steps towards a permanent organization. This time is the same as the meeting of the Tri-States (Tennessee, Alabama, Georgia) Medical Association. We desire that you shall send to this conference the same number of delegates as that to which you are entitled in the House of Delegates in the American Medical Association. There should be an alternate appointed for each delegate, and we would suggest that both the delegate and his alternate be encouraged to attend. At this meeting the question would be decided as to the feasibility of effecting a permanent organization, and if found desirable, a temporary organization will be effected, and the time of completing the organization will be fixed.

To our minds there is great need for bringing these district branches into existence, and the need is especially in the direction of training our young men by giving them opportunity for work. The sections of the American Medical Association have grown so large that the opportunity for presenting papers has grown correspondingly small, and even the opportunity for discussing papers is not such as to make our young men bold enough to attempt to speak, even though they may have some good thoughts to present. Much more might be written in favor of our having the Southeastern District Branch, but this letter has already grown too long. Please let me hear from you, and also let us know the names of the delegates and alternates whom you will appoint. The meeting will take place in the Read House, Chattanooga, at 9 o'clock, on the morning of October 2nd. Let us have your personal views on this matter, and if possible be at the meeting yourself. Instruct your delegates to get a certificate from the agent when they buy their tickets.

Yours fraternally,
G. C. SAVAGE, Chairman.
A. B. COOKE.

In compliance with the above invitation, delegates from the six Southern states mentioned met at Chattanooga on October 2, 1906, one day prior to the date of the annual meeting of the Tri-State Society of Alabama, Georgia and Tennessee. After a conference, a committee of delegates prepared the following resolution to the Tri-State Society:

The undersigned, delegates from the States of Tennessee, Georgia, Alabama, Mississippi, Louisiana and Florida, having met by appointment in Chattanooga to devise a plan or organization for a Southern Medical Association, in direct affiliation with the American Medical Association, recognize that it is eminently fitting that a Southern Medical Association be formed from the district comprised in the States of Mississippi, Tennessee, Georgia, Alabama, Louisiana and Florida, which states by reason of their geographical location and similarity as to population naturally fall into a congenial relationship.

We recognize that a greater opportunity for self improvement and achievement in the realm of scientific research is required by the progressive and cultured physicians of this district than is afforded by the states' societies, and which, on account of its large membership, is denied them in the American Medical Association. We believe that the profession as a whole will be benefited by such a society, and assuredly that the members of this organization will have excellent opportunities to develop their talents. We believe that such an organization will be a long stride forward in perfecting the plan of organization which has been so splendidly carried out by the American Medical Association, and bring all the members in the district into closer touch and more perfect harmony with each other and the national Association.

To accomplish this plan the more perfectly and successfully, we therefore recommend that the Tri-State Medical Association of Tennessee, Alabama and Georgia hereby agree to merge itself into this larger body, and hereby become the nucleus for its formation. In so doing, its sphere of usefulness will be enlarged and its members will all be brought into direct affiliation with the American Medical Association.

We recommend that the name of this organization be the Southern Medical Association. We invite the careful consideration of the Medical Profession of the states above mentioned to the reasons given therefor, and extend a cordial invitation to them to join with us in making this one of the most influential and important bodies of Medical men in the United States.

Respectfully submitted,

Signed:	A. B. COOKE	)
	J. L. CROOK	) Tenn.
	S. R. MILLER	)
	H. H. MARTIN	) Ga.
	W. W. CRAWFORD	) Miss.
	MACK ROGERS	) Ala.

Chattanooga, Tennessee, October 3rd, 1906.

Dr. H. H. Martin, Savannah, President of the Georgia State Society; Dr. Walter W. Crawford, Hattiesburg, President of the Mississippi State Society, and Dr. Jere L. Crook, of Jackson, Tennessee, acting for Dr. Savage, were named as a committee to form a tentative constitution and by-laws for the new organization with the idea that it be considered a Southern District Branch of the American Medical Association, and present it to the Tri-State Medical Association of Alabama, Georgia and Tennessee at its annual meeting in Chattanooga the following day. It was the hope and purpose of this committee that this small body of two hundred members founded by Dr. J. B. Cowan, of Tullahoma, Tennessee, who was Surgeon on the Staff of General Robert E. Lee from 1861 to 1865, would agree to merge itself into a larger group of six states consisting of Louisiana, Mississippi and Florida in addition to the original Tri-States of Alabama, Georgia and Tennessee, the new association to be known as the Southern District Branch of the American Medical Association. These were the suggestions made to all three of the committee members by Dr. G. C. Savage, President of the Tennessee State Medical Association.

The night preceding the opening session we spent in the old Read House, and when we began the task of writing the constitution we unanimously decided to depart from our instructions and to draft a tentative constitution for a Southern Medical Association entirely independent of the American Medical Association, which would eventually embrace all the sixteen Southern states and the District of Columbia. The committee spent the entire night on the preparation of the document in order to have it in shape to present to the Tri-State Medical Association as the first business of the initial session the next morning.

As Chairman of the Committee it became Dr. Crook's duty to present the tentative constitution to the meeting and attempt to induce that small but loyal group composing the Tri-State Medical Association to dissolve, "thaw and resolve themselves into a dew," to die in order that the baby Southern Medical Association could be born. The chief obstacle to our plan was the well-known opposition of the founder of the Tri-State, Dr. J. B. Cowan, of Tullahoma, who very naturally was loath to destroy his own brain child.

The President of the Association gave the committee the right of way over its regular program, and on motion of Dr. Cowan requested that we present the document as a whole first, and then present it section by section for adoption or rejection.

Dr. Crook took his stance immediately opposite the old war horse, who had to be won over or else we would fail utterly in our purpose. In closing Dr. Crook pled on behalf of the young physicians of the Southern states for a wider field to engage our talents than the confines of our respective states. He asked for a stimulus, an incentive to spur us on to worthy deeds, to more intensive study, to greater accomplishments in the field of medicine and surgery. He tried to make them visualize a great Southern Medical Association whose programs would deal with diseases peculiar to the Southern states and would present to the world the results of the research, the clinical experience at the bedside and in the operating room of the splendid body of men composing the ranks of the medical profession of the South.

His plea was ably and enthusiastically buttressed by Dr. Crawford and Dr. Martin, and when we completed the presentation Dr. Cowan arose and under the stress of visible emotion stated his determination, when he first learned of the plan, to fight any move to kill his own brain child. He spoke of the fine record of the Tri-State Association and of the love and loyalty of its membership for their Society. "But," said he, "Mr. President, after listening to the plea of these ambitious young doctors, who have come here today asking for a chance to try their wings over all of Dixie Land, I move that we adopt this tentative constitution as a whole, without changing one jot or one tittle." The motion was carried unanimously, and thus was born the Southern Medical Association.

Immediately thereafter a nominating committee was appointed with instructions to report promptly. In a short time the following names were presented by the committee and unanimously elected as officers of the newly born Southern Medical Association:

President, Dr. H. H. Martin, of Savannah, Georgia; Vice-Presidents, Dr. Mack Rogers, Birmingham, Alabama, Dr. J. B. Cowan, of Tullahoma, Tennessee, and Dr. J. R. Tackett, of Meridian, Mississippi; Secretary, Dr. Raymond Wallace, of Chattanooga, Tennessee; Treasurer, Dr. W. K. Abernathy, Chattanooga. The newly elected officers were installed, and Birmingham, Alabama, was selected for the first meeting of the new organization to be held the first Tuesday in October, 1907.

The first regular meeting was held in Birmingham in October, 1907, with Dr. H. H. Mar-

tin, the first President, presiding. Dr. B. L. Wyman, of Birmingham, was elected President. Dr. Oscar Dowling, of Shreveport, was named Secretary, and the *Shreveport Medical and Surgical Journal,* of which he was editor, was made the official organ. He held the position until his resignation at the 1909 meeting in New Orleans, at which time Dr. W. W. Crawford, of Hattiesburg, Mississippi, was elected President and Dr. Seale Harris, of Mobile, was elected Secretary and Treasurer, and his journal, the *Gulf States Journal of Medicine and Surgery,* became the official organ of the Association, with Dr. Harris as Editor. Dr. Harris continued in these positions until November, 1921, at which time he resigned and was named President of the Association, serving the Association as Secretary, Treasurer and Editor for twelve years without salary.

In November, 1910, the *Southern Medical Journal,* then published in Nashville under the editorial guidance of Dr. John A. Witherspoon, was acquired by Dr. Harris and associates, and was combined with the *Gulf States Journal of Medicine and Surgery.* This merger afforded an official organ of outstanding merit, and has been published since that date as the *Southern Medical Journal.*

At the Hattiesburg meeting in 1911, it was decided to expand the Association to include the entire South. Mr. C. P. Loranz was elected Business Manager in 1912, and in 1921, upon the resignation of Dr. Harris, he became Secretary, Treasurer and General Manager. He has continued to fill these positions efficiently to this date (1939).

After the resignation of Dr. Harris in 1921, Dr. M. Y. Dabney became Editor of the Journal and in 1929 Mrs. M. Y. Dabney became Associate Editor.

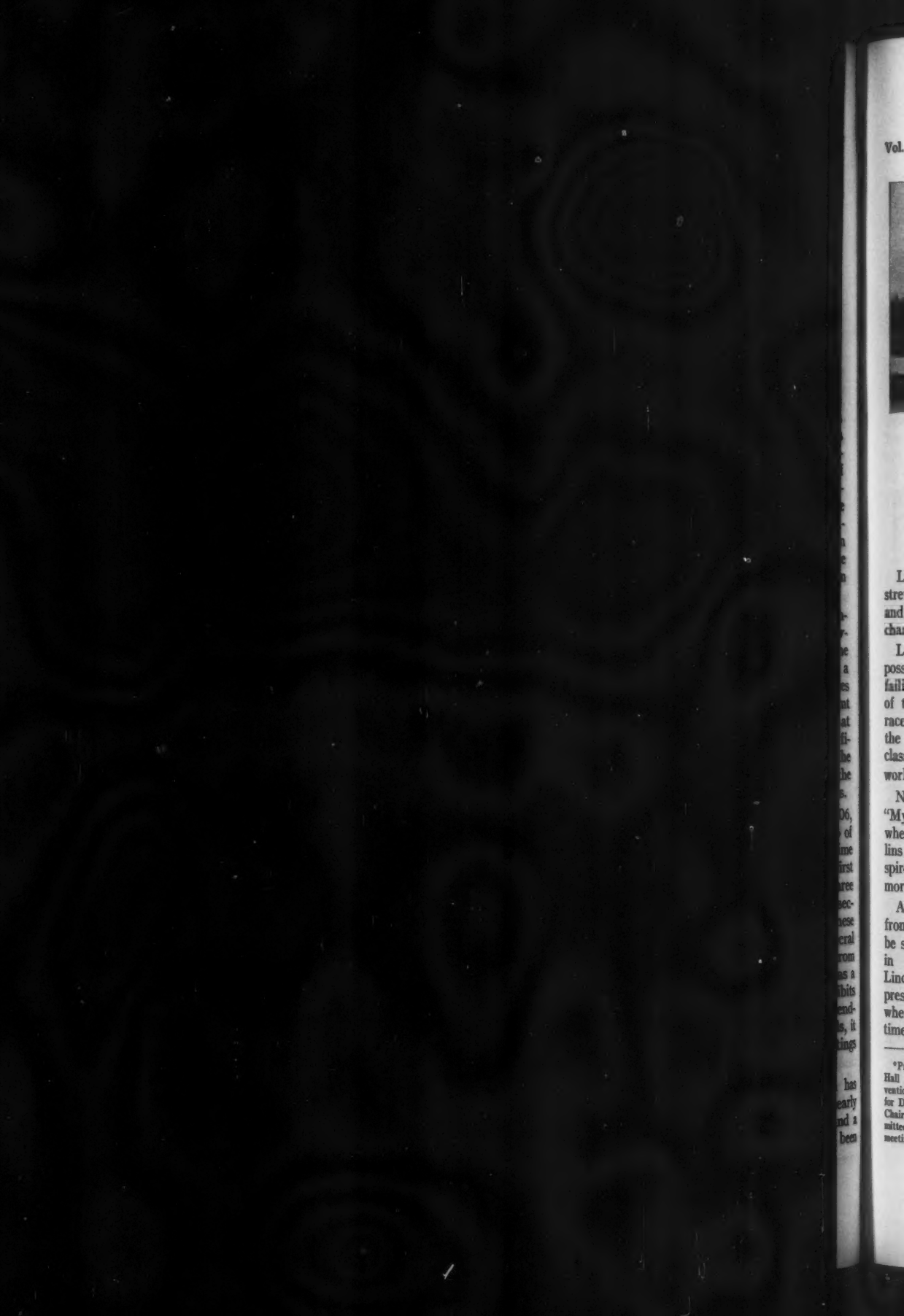
At the Hattiesburg meeting in 1911 Dr. Harris, acting for the stockholders of the *Southern Medical Journal,* himself the principal stockholder, agreed that if the Southern Medical Association would allot to the *Journal* $2.00 of its $3.00 dues, the *Journal* would be sent to each member of the Association and the *Journal* would guarantee that the Association would not go in debt, the *Journal* to absorb any deficit which might accrue if the portion of the dues for the Association's use did not meet its expense. The proposition was accepted and since the *Journal* was to guarantee the Association against an indebtedness, Dr. Harris was given *carte blanche* to use such means as he deemed best to promote the Association in the South and to increase its membership. The Association then began publishing the *Bulletin of the Southern Medical Association* which is issued four times a year and covers the entire South, going to members of state and county medical societies in the states comprising the Southern Medical Association, published wholly to promote interest and membership in the Association.

At this same Hattiesburg meeting in 1911, Dr. Harris agreed to allow the Southern Medical Association to acquire the *Southern Medical Journal* at the end of ten years, the Association to pay Dr. Harris and other stockholders of the *Southern Medical Journal* ten times the average net earnings of the *Journal* for the last three years of that ten-year period, in ten annual payments without interest. In other words, the Association was given the privilege at the expiration of ten years to acquire the *Southern Medical Journal* and to pay for it out of its profits. At the Hot Springs meeting in 1921, the end of the ten-year period, the Association exercised its option and acquired the *Southern Medical Journal,* the stockholders of the *Journal* being paid in seven years instead of the stipulated ten.

The Association began its fiscal year November 1, 1928, clear of all indebtedness, the *Journal* being then paid for in full. From that time to the present the Association has acquired a liquid surplus as represented by United States Government bonds of $30,000.00, an amount that the Board of Trustees of the Association at the last meeting indicated they deemed sufficient to guarantee the economic security of the Association, the revenue of the Association in the future to be used entirely for its various needs.

Since the memorable meeting in October, 1906, the Association has grown from a membership of several hundred to a membership at this time of seven thousand five hundred. At the first meeting in Birmingham in 1907 there were three sections. The Association now has nineteen sections, and in addition to the program of these nineteen sections there are a number of general clinical sessions at the annual meeting. From no scientific and technical exhibits it now has a large number of scientific and technical exhibits at each meeting. From numbering its attendance at those early meetings in the hundreds, it now numbers its attendance at annual meetings in the thousands.

Truly the Southern Medical Association has arrived. Truly the vision and faith of the early pioneers for a great medical association and a great medical journal in the South have been realized.



Skyline View of Louisville from the Ohio River.

LOUISVILLE—WHERE WE MEET

LOUISVILLE*

ENVIRONS OF LOUISVILLE

Louisville, the metropolis of Kentucky, stretching along the south bank of the beautiful and historic Ohio River, is a city of particular charm.

Louisville and surrounding Kentucky country possess historical attractions that are of never-failing interest. This city is famed as the home of the internationally known Churchill Downs race track. Here is run annually, early in May, the historic Kentucky Derby, the oldest turf classic in America, in which the flower of the world's three-year-olds compete.

Nearby points of interest to the traveler are "My Old Kentucky Home," now a state shrine, where Stephen Collins Foster was inspired to write his immortal song.

A short distance from Louisville can be seen the log cabin in which Abraham Lincoln was born, preserved on the spot where it stood at that time in a beautiful granite memorial. The country near this national shrine is rich in scenes connected with the boyhood of Lincoln.

Near Louisville at Bardstown, Kentucky, is situated St. Joseph's Church, in which are kept a group of old masters' paintings, gifts of King Louis Phillipe of France, who spent part of his exile near this spot. Upon his restoration to the throne of France he showed his appreciation of the hospitality extended in Bardstown by presenting this art collection, valued at over a million dollars, to Bishop Flaget, the first Catholic bishop west of the Alleghenies.

One of the seven wonders of the modern world within easy reach of Louisville is Mammoth Cave. This entrancing underground cavern, with its 150 miles of charted passages, annually attracts thousands of visitors. In it, among the things to be seen, are Echo River, the underground mystery stream in which are found eyeless fish; the Star Chamber, in which the mineral formations in the vaulted chamber give the illusion of a starlit sky; seemingly bottomless pits; cathedral-like spaces and mineral formations akin to architectural creations.

Jefferson County Armory, location of General Headquarters (Registration), some General Sessions, some Sections, and the Scientific, Technical and Hobby Exhibits.

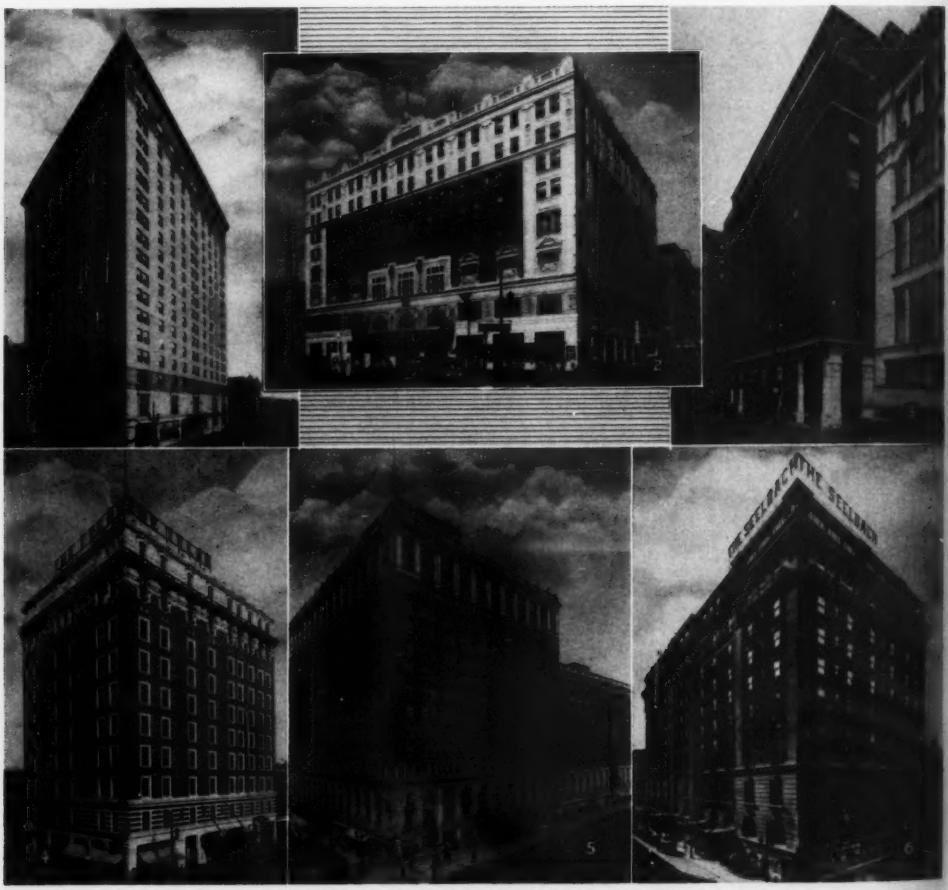
*Prepared by Dr. D. P. Hall and the Louisville Convention and Publicity League for Dr. A. Clayton McCarty, Chairman of Publicity Committee for the Louisville meeting.

Mammoth Cave is the largest of the caverns found in the cave regions and has been made into a National Park by the United States Government.

Then, too, there is the world-renowned Bluegrass region of Kentucky, with its famous stock farms where Man o' War and other Monarchs of the Turf may be seen.

HISTORY

Louisville was founded when George Rogers Clark halted at the Falls of the Ohio with his 150 raw militia, bound for the conquest of the British posts in the Illinois country, for the purpose of disciplining his forces and preparing for the campaign which resulted in giving the vast Northwest to the fledgling United States of America. On Corn Island, opposite what is now the business district of Louisville, Clark established a fort and a base of supplies. Families which he had unwillingly taken on the boats were put to good service in guarding the supplies he was leaving behind. The eighteen cabins erected in the form of a fort were their habitations and the foundation of Louisville. After the first thrusts against the British were successful, Clark made the Falls of the Ohio River his principal headquarters for the remainder of the Revolution. Thus Louisville became the chief military outpost of the West from which Clark maintained American dominion. He spent all his later years here at the Falls of the Ohio. It



(1) Kentucky Hotel, (2) Henry Clay Hotel, (3) Henry Watterson Hotel, (4) Tyler Hotel, (5) Brown Hotel, and (6) Seelbach Hotel.

is fitting that the city which he founded should be the last resting place of this hero of the Revolution. His remains rest in beautiful Cave Hill, a cemetery with a botanical garden-like scope in its architecture, and a point well worth visiting when in the city.

The city was chartered in 1779 by the Virginia Legislature, when Kentucky was a part of that State.

Louisville is connected with early American history by still another tie. Near the city limits may be seen the tomb of Zachary Taylor, twelfth President of the United States, located on the grounds of the former homestead of the ex-President. In this home, still standing, President Taylor's daughter was married to Jefferson Davis, the only President of the Confederacy, who was also a native of Kentucky.

HISTORY OF MEDICAL TEACHING

The romance of Kentucky medicine has always been an inspiration to medical men. Within the borders of this Commonwealth the first medical school west of the Allegheny Mountains was established, Transylvania University Medical School (1799). This proud institution of learning for many years was one of the most famous schools of medicine founded during and shortly after the Revolutionary War. It was here that Benjamin Winslow Dudley, premier surgeon of the west, held forth and made of Kentucky the great Mecca for students of medicine as well as the infirm, the halt and the blind.

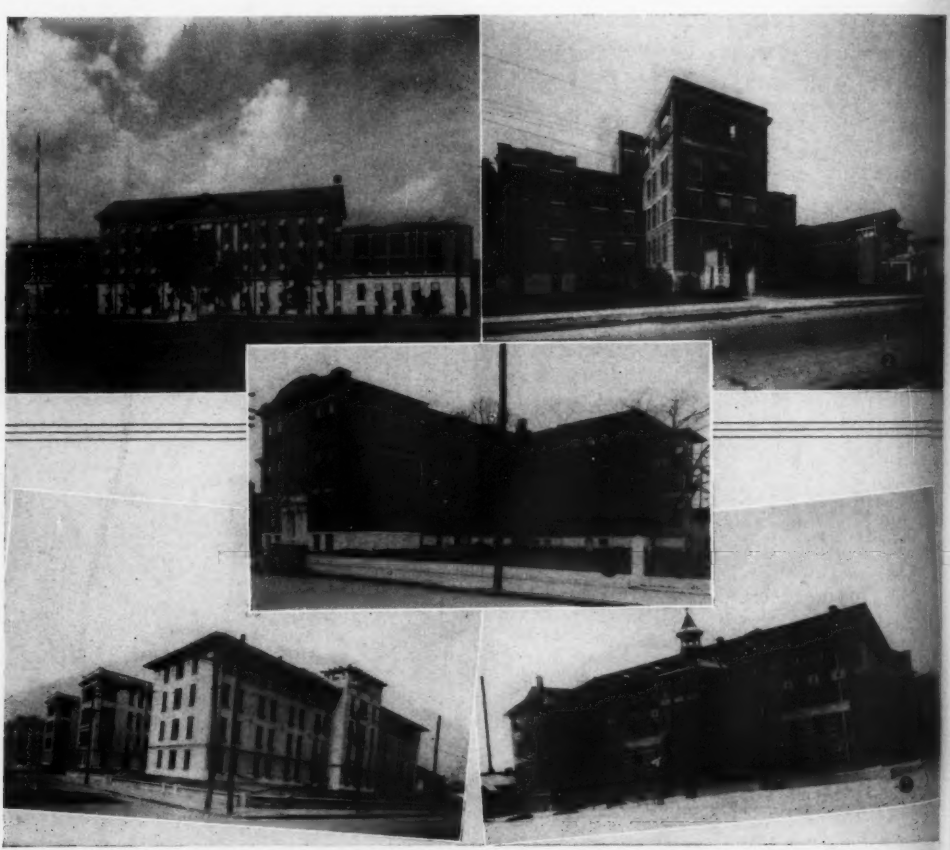
Louisville, due to its favorable location at the falls of the Ohio, had in the middle 1830's risen to an important position in the State, both as to population and situation. This, coupled with a break in the faculty of Transylvania University in Lexington, eventuated in the chartering in 1833 and the founding in 1837 of the Louisville Medical Institute. A very ornate and modern building was completed by the City of Louisville

Airplane View of Downtown Louisville showing Ohio River Falls and Navigation Canal.

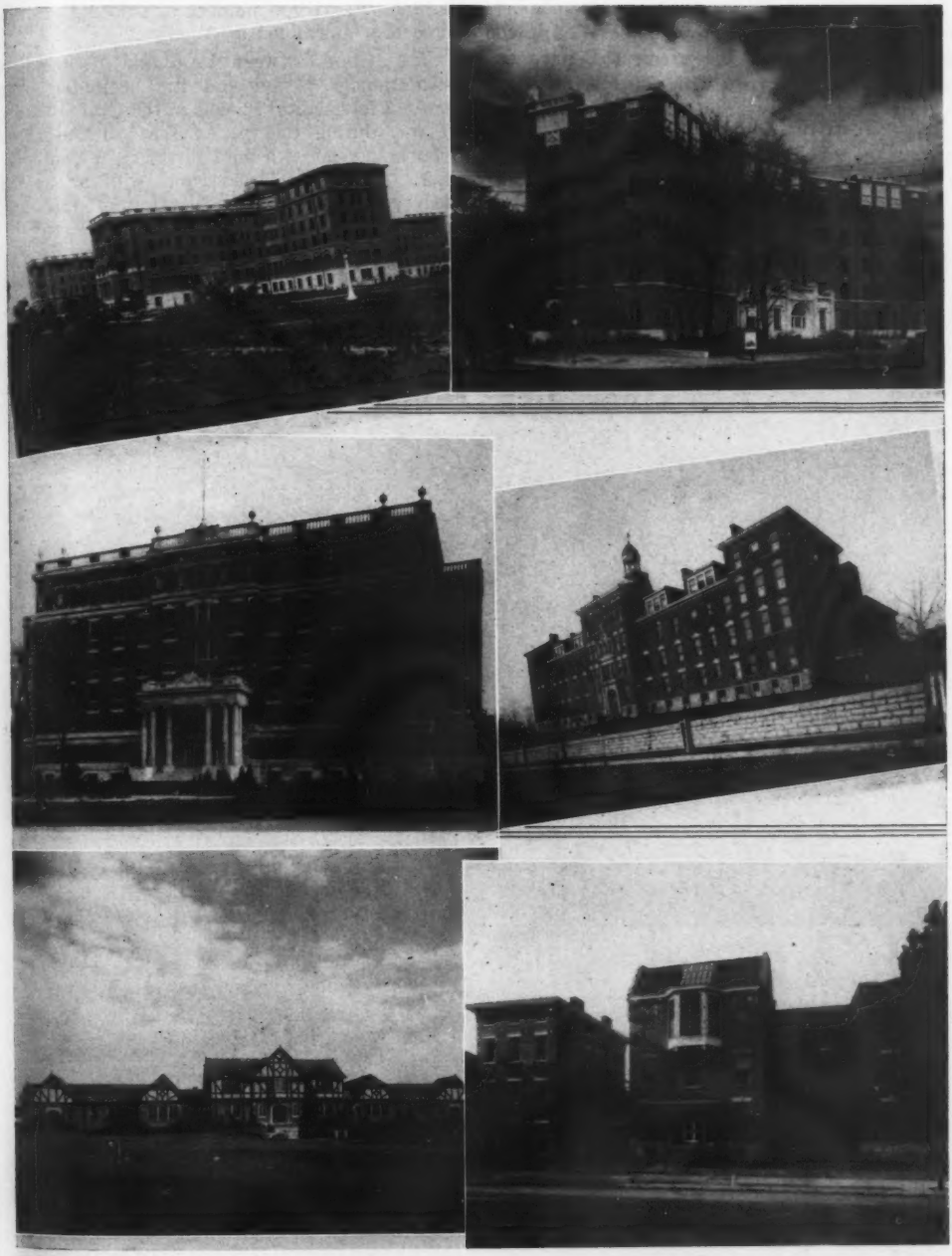
for occupancy of the Louisville Medical Institute. Thus the oldest municipal university in America was born. From its incipiency clinical lectures were delivered in the Louisville Marine Hospital and the City Workhouse, this school being one of the first in the United States to institute bedside teaching. The faculty members at this early date included the elite of the American Medical profession. Their names are known by the history of their performances: Samuel D. Gross, Daniel Drake, Joshua Barker Flint, Austin Flint, Henry Miller, Lunsford P. Yandell, Jedediah Cobb, T. G. Richardson, T. S. Bell, Henry Bullitt, Charles Caldwell and John Esten Cooke.

In 1846, the Louisville Medical Institute was rechristened the University of Louisville and became the keystone of the present great modern University of Louisville. It is now situated on Belknap Campus with its Schools of Medicine, Law, Liberal Arts, Dentistry, Engineering, Music, the Graduate School, School of Social Administration, and Division of Adult Education.

In 1850, the Kentucky School of Medicine, a descendant of Transylvania University, was established as the Medical Department of the Masonic University of Kentucky, the latter portion of the title being dropped during 1852. The guiding star in this new active competitor of the University of Louisville was the Professor Emeritus of Anatomy and Surgery, Benjamin Winslow Dudley. Not long after the founding of this school the Louisville Medical College was organized in 1868. In 1873 the Hospital College of Medicine, the Medical Department of Central University of Kentucky, was founded.



(1) United States Marine Hospital, (2) Jewish Hospital, (3) Methodist Deaconess Hospital, (4) Louisville City Hospital, and (5) Saints Mary and Elizabeth Hospital.



(1) St. Joseph Infirmary, (2) Norton Memorial Infirmary, (3) Kentucky Baptist Hospital, (4) St. Anthony's Hospital, (5) Kosair Crippled Children's Hospital, and (6) Children's Free Hospital.

Differences arose among the faculty members of several of these schools which resulted in the founding in 1898 of the Medical Department of Kentucky University with the following faculty: Joseph B. Marvin, Thomas C. Evans, James M. Holloway, Clinton W. Kelley, Sam E. Woody, J. Garland Sherrill, Louis Frank, L. L. Solomon, Henry Enos Tuley, Carl Weidner, Sr., and W. Ed. Grant. Many of this faculty are still active and will be remembered by members of the Southern Medical Association.

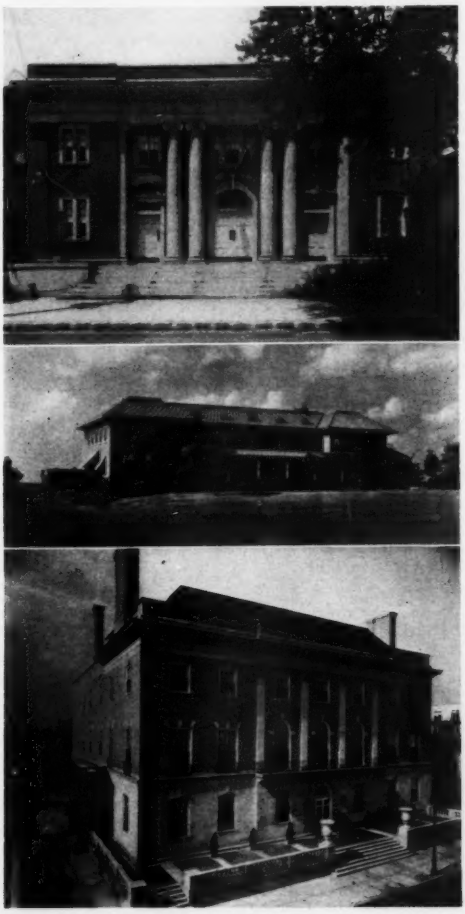
The years between 1890 and 1900 found Louisville one of the greatest medical centers in the United States with its five medical schools teaching the largest number of students of medicine ever assembled in America.

The period between 1906 and 1909 was a revolutionary period and the beginning of a new era for medical schools in the United States. It was during this period that all the above schools merged with the University of Louisville, thus making one large school with an alumni body extending all over the United States and in most foreign countries.

The professional control of the Louisville City Hospital in 1922 was vested in the faculty of the University. To this institution of five hundred beds, in 1937 was added a dispensary wing of four stories at a cost of $465,000. The Children's Free Hospital and Waverly Hills Sanatorium are affiliated with the University for clinical teaching.

During 1935 a new four-story annex was added to the School of Medicine, more than doubling the floor space and enabling every department to teach in well arranged units.

Dr. John Walker Moore has been Dean of the School of Medicine since 1928, at which time vast changes were being instituted in the teaching of medicine, and it is due primarily to Dr. Moore's indefatigable efforts that these changes were made in the University. Also, his constant planning of the building program for the



Woman's Club of Louisville (top); Louisville Country Club (center); and Pendennis Club (bottom).

University of Louisville School of Medicine.

School of Medicine has helped to maintain its high standards.

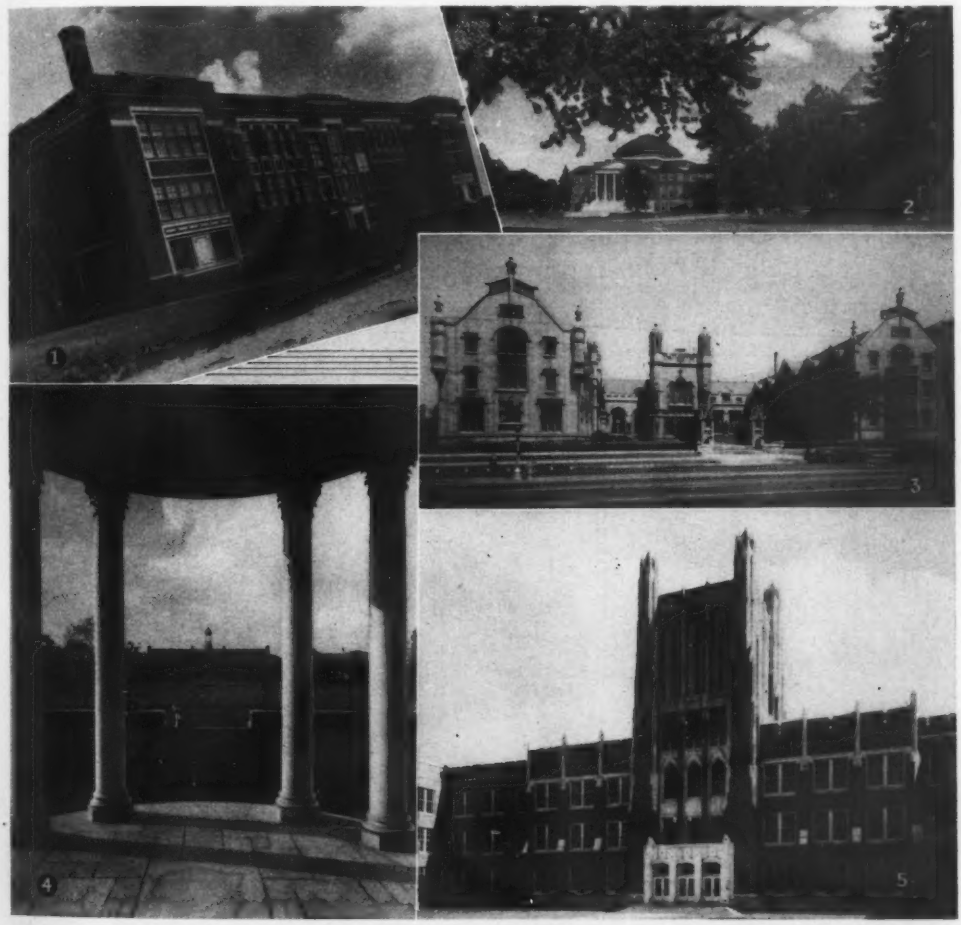
The tenth president of the University of Louisville, Dr. Raymond A. Kent, was installed in 1929. Dr. Kent was the first real professional educator to be made the executive of the University and immediately on his assuming the duties of president, the University entered upon a new era with an expansion program of building known as the Larson Plan. Indeed, Dr. Kent has brought light to an old dream of the founders, a University to house many good departments.

Members of the Southern Medical Association will enjoy a visit to the University and all of its departments.

MODERN LOUISVILLE

Louisville possesses excellent facilities for conventions and expositions. Testimonials from many groups, organizations and associations prove the ability of the Louisville hotels to care adequately for large group meetings.

Situated in the heart of the hotel and business district and within easy walking distance of all hotels is the Jefferson County Armory, the auditorium of which seats 8,500 persons, with exhibit facilities of 71,000 square feet. Complete



(1) McFerran Grade School (a typical grammer school). (2) University of Louisville, Administration Building, (3) Presbyterian Theological Seminary, (4) Southern Baptist Theological Seminary, and (5) Halleck Hall High School (a typical high school).

Ohio River and Bridge at night, Louisville in the background.

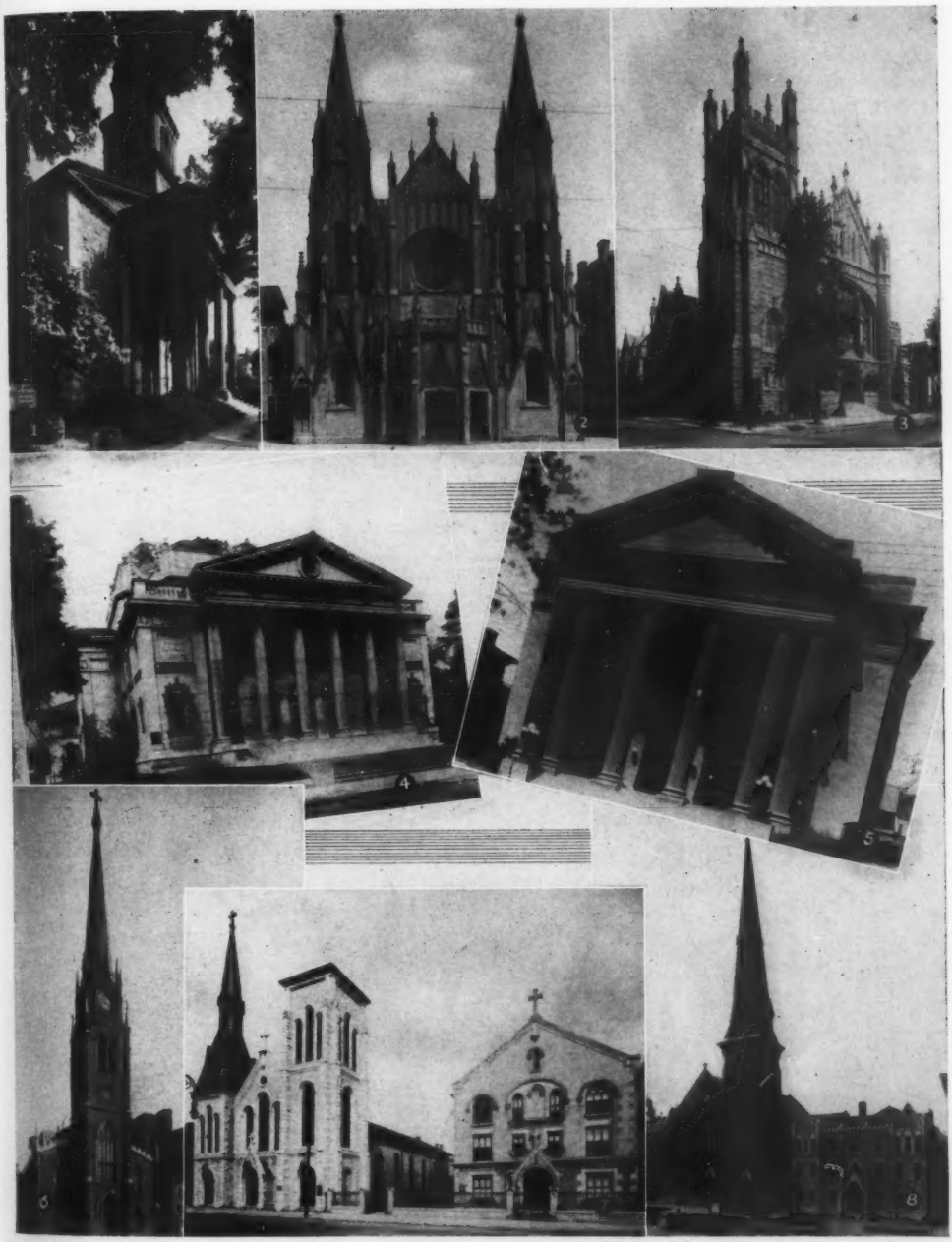
electric power, water, drainage, gas, steam, etc., are available. Other buildings are available for exhibits, ranging from 10,000 to 75,000 square feet of floor space. In addition thereto, there are numerous theaters and other auditoriums.

Metropolitan Louisville has grown to a population of approximately 400,000 persons, of which 97 per cent are native born.

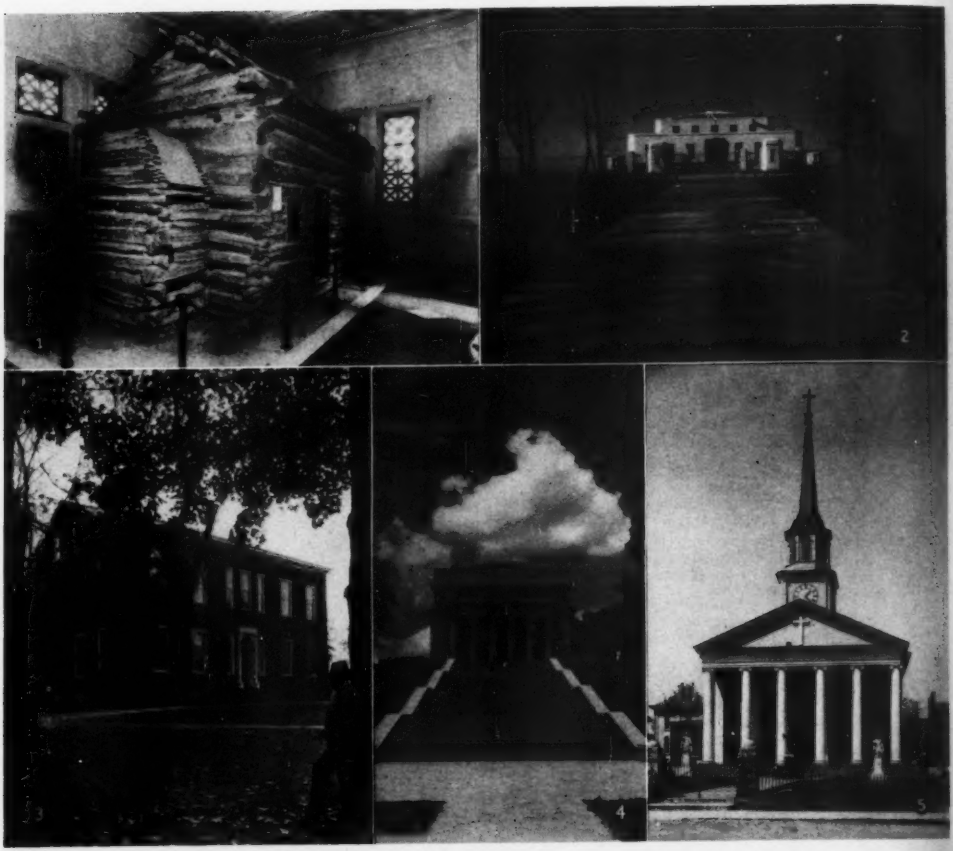
The advantageous central location of Louisville can be most aptly described in the phrase "At the Cross-roads of the Nation." In fact, Louisville is located just 83 miles southeast of the exact center of population of the United States.

Eight trunk line railroads radiating in all directions connect Louisville directly with the

(1) Louisville Memorial Auditorium, (2) Court House with portion of City Hall to the left, (3) J. B. Speed Memorial Museum, and (4) Post Office and Government Building.



(1) Fourth Avenue Presbyterian Church, (2) First Lutheran Church, (3) Fourth Avenue Methodist Church, (4) First Christian Church, (5) Adath Israel Temple, (6) Cathedral of the Assumption, Catholic, (7) Christ Church Cathedral, Episcopal, and (8) Broadway Baptist Church.



(1) Cabin where Abraham Lincoln was born, Lincoln Shrine at Hodgenville, (2) United States Gold Depository at Fort Knox, (3) Stephen Collins Foster's "Old Kentucky Home" at Bardstown, (4) Lincoln Shrine at Hodgenville, and (5) St. Joseph's Cathedral at Bardstown.

Union Railroad Station (left); Bowman Field, Municipal Airport (center); and Central Railroad Station (right).

Derby Day at Churchill Downs.

(1) Outdoor Theater in Iroquois Park, (2) Scene in Seneca Park, (3) Scene in Cherokee Park, (4) Daniel Boone Monument in Cherokee Park, and (5) Tomb and Monument of Zachary Taylor, twelfth President of the United States.

other metropolitan areas of the country. Louisville is the bus and truck hub of the southeast, and an important airline center.

There are 2,056 acres of public park land in Louisville. These parks are conceded to be the most beautiful civic, natural parks in America.

Louisville possesses well-appointed boat, golf, town and country clubs in settings of scenic beauty unsurpassed.

Today, among the larger cities of the United States, Louisville stands second in the per capita value of its manufactures. In point of industrial wage earners, and industrial wages paid, it outranks every other city south of the Mason-Dixon line by more than 25 per cent.

Louisville is one of the largest distilling centers of the United States. Kentucky produces 40 per cent of all the whiskey distilled in the country. Louisville ranks third among American cities as a cigarette producing center, over 12 billion cigarettes being manufactured here annually. It ranks fourth among American cities as a producer of other types of tobacco products.

Among the leading manufactured products of the city of Louisville are numbered iron and steel, railroad repair parts, food products, textiles and textile products, chemicals and allied products, lumber and lumber products, stone, clay and glass products, machinery, transportation equipment, paper and printing, rubber products, leather and its manufactures, metals and metal products, and musical instruments.

OFFICERS, JEFFERSON COUNTY MEDICAL SOCIETY, LOUISVILLE

President—Dr. E. Lee Heflin.
President-Elect—Dr. M. J. Henry.
First Vice-President—Dr. Frank M. Stites.
Second Vice-President—Dr. Chas. E. Gaupin.
Secretary—Dr. Woodford B. Troutman.
Treasurer—Dr. Pat R. Imes.
Immediate Past-President—Dr. Oscar O. Miller.

COMMITTEES ON ARRANGEMENTS, LOUISVILLE

General Chairman—Dr. E. L. Henderson.

Executive Committee—Dr. E. Lee Heflin, Chairman; Dr. Irvin Abell, Dr. M. J. Henry and Dr. Arthur T. McCormack.

Vice-Chairmen—Dr. Guy Aud, Dr. Philip E. Blackerby, Dr. Leo Bloch, Dr. Oscar Bloch, Dr. C. W. Dowden, Dr. Walter I. Hume, Dr. John Walker Moore, Dr. W. Barnett Owen and Dr. H. C. T. Richmond.

Honorary Vice-Chairmen—Dr. Bernard Asman, Dr. Philip F. Barbour, Dr. Louis Frank, Dr. Wm. E. Gardner, Dr. Granville S. Hanes, Dr. George A. Hendon, Dr. Chas. W. Hibbitt, Dr. John J. Moren, Dr. J. G. Sherrill and Dr. Edward Speidel.

Secretary—Dr. Woodford B. Troutman.

Finance—Dr. J. Duffy Hancock, Chairman; Dr. E. S. Allen, Dr. G. G. Altman, Dr. Marion F. Beard, Dr. Benj. L. Brock, Dr. David M. Cox, Dr. L. Ray Ellars, Dr. D. M. Embry, Dr. I. T. Fugate, Dr. H. H. Hagan, Dr. A. D. Kennedy, Dr. J. Allen Kirk, Dr. Herman Mahaffey, Dr. Louis Mitzlaff, Dr. Henry M. Rubel, Dr. James R. Stites, Dr. Malcom Thompson, Dr. Esther G. Wallner, Dr. Harry M. Weeter and Dr. Karl D. Winter.

Program—Dr. J. B. Lukins, Chairman; Dr. Hugh R. Leavell, Dr. Oscar O. Miller and Dr. Saml. A. Overstreet.

Entertainment—Dr. Irvin Abell, Jr., Chairman; Dr. Harry S. Andrews, Dr. Owen S. Ogden, Dr. Harper E. Richey and Dr. Charles F. Wood.

Membership—Dr. Uly H. Smith, Chairman; Dr. Joseph C. Bell, Dr. Max L. Garon, Dr. R. Arnold Griswold and Dr. L. W. Nehil.

Hotels—Dr. James H. Pritchett, Chairman; Dr. Chas. M. Edelen, Dr. J. Murray Kinsman, Dr. W. W. Nicholson and Dr. Lee Palmer.

Meeting Places—Dr. Frank M. Stites, Chairman; Dr. A. E. Bell, Dr. Ben H. Hollis, Dr. Winston U. Rutledge and Dr. J. B. Shacklette.

Radio—Dr. D. P. Hall, Chairman; Dr. Lytle Atherton, Dr. Walter Dean, Dr. Hiram S. Eggers, Dr. Chas. E. Gaupin, Dr. John W. Heim, Dr. Wm. M. McClarin and Dr. Wm. Curry Martin.

Publicity—Dr. A. Clayton McCarty, Chairman; Dr. Ellis S. Allen, Jr., Dr. Gordon S. Buttorff, Dr. Morris Flexner, Dr. John Stites, Dr. R. B. Holt and Dr. Carlisle Morse.

Alumni Reunions—Dr. Wilson Smock, Chairman; (Mr.) Leslie Shively, Dr. Albert E. Leggett, Dr. Jos. H. Green, Dr. Edwin P. Solomon, Dr. John T. Bate, Dr. Robt. F. Monroe, Dr. Marinus H. Pulskamp, Dr. Owsley Grant, Dr. Jos. M. Frehling, Dr. Richard M. Goldsborough, Dr. Courtland Beeler, Dr. Geo. F. Archer, Jr., Dr. R. Alexander Bate, Jr., Dr. Richard R. Elmore, Dr. Augustus J. Pauli, Dr. James W. Bruce, and Dr. Cleves Richardson.

Fraternity Luncheons—Dr. Dougal M. Dollar, Chairman; Dr. Henry B. Asman, Dr. B. F. Aydelotte, Dr. Arthur L. Juers and Dr. Bernard Schneider.

Scientific Exhibits—Dr. W. O. Johnson, Chairman; Dr. J. S. Bumgardner, Dr. Laman A. Gray, Dr. Wm. T. McConnell, Dr. W. J. Martin, Dr. A. J. Miller and Dr. John D. Trawick.

Information—Dr. J. Andrew Bowen, Chairman; Dr. C. J. Armstrong, Dr. Maurice G. Buckles, Dr. Arthur T. Hurst, Dr. Pat R. Imes and Dr. Thos. J. Crice.

Transportation—Dr. Franklin Jelsma, Chairman; Dr. F. W. Caudill, Dr. Alex. M. Forrester, Jr., Dr. Richard T. Hudson, Dr. Robertson O. Joplin and Dr. Margaret A. Limper.

Golf—Dr. D. Y. Keith, Chairman; Dr. A. L. Bass, Dr. Byron Bizot, Dr. Jesse H. Simpson and Dr. F. W. Urton.

Trap Shooting—Dr. James S. Lutz, Chairman; Dr. B. D. Choate, Dr. G. L. Dyer, Dr. Wm. E. Fallis, Dr. J. W. Fitch, Dr. Ira N. Kerns and Dr. J. B. Stroud.

Hobbies—Dr. Jesshill Love, Chairman; Dr. R. Hayes Davis, Dr. Sydney E. Johnson, Dr. Clyde McNeill, Dr. R. Douglas Sanders, Dr. R. Glen Spurling and Dr. Paul A. Turner.

Women Physicians—Dr. Nora Dean, Chairman; Dr. Frieda Berresheim, Dr. Alice N. Pickett, Dr. Lillian H. South and Dr. M. Virginia Vogt.

Ladies' Entertainment—Mrs. Richard T. Hudson and Mrs. Philip E. Blackerby, Chairmen.

PROGRAM, SOUTHERN MEDICAL ASSOCIATION

Thirty-Fourth Annual Meeting, Louisville, Kentucky

November 12-15, 1940

PROGRAM

The following general and clinical sessions, sections, allied and visiting associations, compose the program for the Louisville meeting. The complete preliminary program of each will be found in this order on succeeding pages, following the program of entertainment, scientific exhibits and miscellaneous activities:

General Public Session (Tuesday night).
General Session (Wednesday night).
Clinical Session, Louisville Day (Tuesday).
Clinical Session (Wednesday forenoon).
Section on Medicine.
Section on Pediatrics.
Section on Gastroenterology.
Section on Pathology.
Section on Neurology and Psychiatry.
Section on Radiology.
Section on Dermatology and Syphilology.
Section on Allergy.
Section on Surgery.
Section on Bone and Joint Surgery.
Section on Gynecology.
Section on Obstetrics.
Section on Urology.
Section on Proctology.
Section on Railway Surgery.
Section on Ophthalmology and Otolaryngology.
Section on Anesthesia.
Section on Medical Education and Hospital Training.
Section on Public Health.
American Public Health Association, Southern Branch.
National Malaria Committee.
American Society of Tropical Medicine and American Academy of Tropical Medicine.
Southern and Mississippi Valley Student Health Associations.
Woman's Auxiliary to the Southern Medical Association.

PROGRAM OF ENTERTAINMENT

WEDNESDAY, NOVEMBER 13, 9:00 P. M.—Reception for President, members and guests of the Southern Medical Association, followed by a grand ball, Brown Hotel, Crystal Ballroom.

Golf and Trap Shooting. See pages 1233 and 1234 for details.

Entertainment for Visiting Ladies

Mrs. Richard T. Hudson and Mrs. Philip E. Blackerby, General Chairmen for Ladies' Entertainment, announce the following activities and entertainment for visiting ladies:

TUESDAY, NOVEMBER 12.—Registration for visiting ladies, beginning at 9:00 a. m., Brown Hotel.

TUESDAY, NOVEMBER 12, 8:00 P. M.—General Public Session, Louisville Memorial Auditorium.

WEDNESDAY, NOVEMBER 13, 8:00 A. M.—Executive Board meeting and breakfast, Woman's Auxiliary to the Southern Medical Association, Brown Hotel, Louis XVI Room.

WEDNESDAY, NOVEMBER 13, 10:00 A. M.—Annual meeting (first session), Woman's Auxiliary to the Southern Medical Association, Brown Hotel, Roof Garden.

WEDNESDAY, NOVEMBER 13, 12:30 NOON.—Annual Luncheon, Woman's Auxiliary to the Southern Medical Association, Brown Hotel, Crystal Ballroom. Luncheon tickets, $1.00.

WEDNESDAY, NOVEMBER 13, 3:00 P. M.—Program at the Woman's Club of Louisville, 1320 Fourth Street, followed by Tea.

WEDNESDAY, NOVEMBER 13, 8:00 P. M.—General Session of the Southern Medical Association (President's Night) followed by the President's Reception and Grand Ball, Brown Hotel, Crystal Ballroom.

THURSDAY, NOVEMBER 14, 9:30 A. M.—Annual meeting (concluding session), Woman's Auxiliary to the Southern Medical Association, Brown Hotel, South Room.

THURSDAY, NOVEMBER 14, 1:00 P. M.—Luncheon at Pendennis Club, given by wives of Jefferson County (Louisville) physicians.

THURSDAY, NOVEMBER 14—Following the Luncheon at Pendennis Club, busses will leave for Bardstown, tickets $1.00. Or, local women will take visiting ladies who do not care to go to Bardstown to see Churchill Downs, Speed Museum, Lemon's Galleries or any other points of interest in the City.

GOLF—Any ladies wishing to play golf may do so by notifying the Golf Chairman, Mrs. W. Stewart Carter.

Hostess Committee

Members of the Hostess Committee will be in the lobbies of the principal hotels to give any information and render any service possible to visiting ladies.

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

The Woman's Auxiliary to the Southern Medical Association, Mrs. Charles P. Corn, Greenville, South Carolina, President, will hold its seventeenth annual meeting at Louisville, Wednesday and Thursday, November 13 and 14. The first and opening session will be on Wednesday at 10:00 a. m., followed by the annual luncheon at 12:30 noon, with the concluding session Thursday at 9:30 a. m., all at the Brown Hotel. Wives, mothers, sisters and daughters of all physicians attending the Southern Medical Association meeting are cordially invited and urged to be present.

The Executive Board, Mrs. Charles P. Corn, President, presiding, will meet Wednesday, November 13, at 8:00 a. m. for breakfast at the Brown Hotel, Louis XVI Room. Time and place for the post-session meeting of the Executive Board, Mrs. M. Pinson Neal, Columbia, Missouri, incoming President, presiding, will be announced at the meeting.

See page 1232 for complete program of the Auxiliary meeting.

THE JEFFERSON COUNTY MEDICAL SOCIETY*

The Jefferson County Medical Society is host this year for the third time to the Southern Medical Association, the two previous meetings being held in 1920 and 1930. Joining in the Society welcome are the Kentucky State Medical Association, the Medical Department of the University of Louisville, and numerous smaller societies of the City.

The organization of the County Society dates back many years, but the more intensive, scientific work began in 1902 with regular monthly meetings held in the amphitheater of one of the public schools. Numerous smaller societies were anxious for this organization, and its formation proved of great value to the scientific progress of medicine and surgery in the City.

The first president of the Society was Dr. William Bailey, a most highly esteemed member of the profession, a gentleman and a scholar; following Dr. Bailey were Dr. A. Morgan Vance, Dr. H. H. Grant, Dr. Wm. Chetham and others.

In 1903 the attendance and interest had increased to such an extent that the Society was compelled to seek larger quarters and moved to the Old Galt House, a famous and historic hotel of the earlier days.

The essays, discussions and case reports of the Society were

*Prepared for the JOURNAL by Dr. Charles W. Hibbitt, Louisville, for the Publicity Committee.

sought after by local and distant journals. About this time (1906) the older members of the Society decided that the younger members should assume the responsibility and carry forward the work. From the younger practitioners Dr. J. J. Moren was elected President, and the activities of the Society increased to such an extent that new quarters were secured. The top floor of the Atherton Building (Physicians Building) was fitted out for a meeting hall with library and committee rooms attached and a permanent, all-time secretary and stenographer was secured. The library continued to gain in volumes and periodicals and membership in the Society increased consistently.

In about five years the new City Hospital was completed and the five medical schools of the City merged with the University of Louisville Medical Department. The new staff and many other physicians were put in charge of the service and teaching at this hospital.

The County Society was then invited to make the City Hospital headquarters without charge and the large amphitheater was to be used for the general meetings with the large adjoining room for the library and stenographer. The library was made available to the students and interns. In addition, any member was at liberty to use any case in the hospital to illustrate or amplify any particular subject being presented to the Society meeting. The monthly county announcement also carried the roster of meetings during the month, together with subjects, time, and place of the individual society meetings.

In 1937, with the assistance of United States public funds, an addition to the Medical School was erected for laboratory work. The Library was then combined with the University of Louisville (Medical) Library in this new wing of the School. In the Library now are 25,000 volumes and 350 journals, all open to the students and medical profession. The Library is in charge of a trained librarian with whom the permanent secretary and stenographer of the Society serves. In addition to assisting in the Library, the secretary conducts the business affairs of the Society.

The Society this year has a membership of 439 and meetings occur twice a month with the exception of July and August, when meetings are suspended. Several times during the year guest speakers are presented and two social business meetings a year add variety to the programs.

The activities of the Society are numerous. The Certified Milk Committee arranges with dairymen for certification and delivery of certified milk. The Committee on Public Relations sponsors and steers important legislation. The most important of all is the Medical Economics Committee. The duties of this Committee include the study of and recommendation on such questions as health, accident, group and hospital insurance, public health activities, contact and industrial practice, nurses' training and service, cost of medical care, and many allied problems of the medical profession today. The Professional Service Committee has charge of the Physicians' Exchange, the Part Pay Plan, the Nurses' Registry and the Credit and Rating Bureau.

The present officers of the Jefferson County Medical Society are: Dr. E. Lee Heflin, President; Dr. M. J. Henry, President-Elect; Dr. Frank M. Stites, First Vice-President; Dr. Chas. E. Gaupin, Second Vice-President; Dr. Woodford B. Troutman, Secretary; and Dr. Pat R. Imes, Treasurer.

WOMEN PHYSICIANS

The twenty-sixth annual meeting and dinner of the Women Physicians of the Southern Medical Association will be held at the Kentucky Hotel, Colonel's Room, Louisville, Kentucky, Thursday, November 14, at 6:00 p. m. Dr. Nina Fay Calhoun, Dallas, Texas, Chairman of Women Physicians of the Southern Medical Association, will preside.

Mrs. Mary Breckinridge, Frontier Nursing Service, Wendover, Kentucky, will be the principal speaker of the evening, her subject being "Frontier Nursing Service." Following the address there will be a floor show, the "Blue Danube," by the Lilias E. Courtney School of Dancing, Louisville.

On Tuesday, Wednesday and Thursday, 3:00 to 5:00 p. m., tea will be served informally in Parlor A, Kentucky Hotel, to any women physicians who may wish to come by for a bit of rest and relaxation.

Women physicians are invited to take part in any and all of the special entertainment arranged for visiting ladies.

Dr. Nora D. Dean, 913 Heyburn Building, Louisville, is local Chairman for Women Physicians.

RADIO

The Association will be on the air Tuesday, Wednesday and Thursday, November 12-13-14, from Radio Stations W H A S (820), W G R C (1370), W A V E (940), and W I N N (1210), the four stations in Louisville, with outstanding speakers. The radio program, subjects and speakers, is now being developed.

CONFERENCE OF PRESIDENTS, PRESIDENTS-ELECT, SECRETARIES AND EDITORS

Tuesday, November 12, 6:00 p. m.

Pendennis Club, Louisville

The Presidents, Presidents-Elect and Secretaries of the state medical associations of the states comprising the Southern Medical Association, and Editors of the state medical journals in these states, will have a get-together dinner meeting for an exchange of ideas, an informal round table on matters of mutual interest. The Conference is an independent group, has no connection in an official way with the Southern Medical Association, the Association meeting offering a desirable time and place for holding the Conference. Similar conferences were held at Baltimore in 1936, New Orleans in 1937, Oklahoma City in 1938, and Memphis in 1939.

Dr. Harvey F. Garrison, Jackson, Mississippi, is Chairman. He extends a cordial invitation to all Presidents, Presidents-Elect, Secretaries and Editors to attend this conference meeting.

LUNCHEON CLUBS

The following luncheon clubs of Louisville extend a most cordial invitation to all members in attendance upon the Southern Medical Association meeting, who are members of these clubs in their home city, to have lunch with them:

Rotary Club, Thursday, November 14, 12:15 noon, Brown Hotel.

Kiwanis Club, Wednesday, November 13, 12:15 noon, Brown Hotel.

Lions Club, Tuesday, November 12, 12:15 noon, Brown Hotel.

Optimist Club, Tuesday, November 12, 12:15 noon, Kentucky Hotel.

Exchange Club, Thursday, November 14, 12:15 noon, Kentucky Hotel.

American Business Club, Wednesday, November 13, 12:15 noon, Kentucky Hotel.

American Legion (Members) Club, Monday, November 11, 12:15 noon, Canary Cottage.

American Legion (Officers) Club, Friday, November 15, 12:15 noon, Canary Cottage.

GENERAL HEADQUARTERS

Registration, Information, Mail, Etc.

Jefferson County Armory

The General Headquarters (Registration, Information, Mail, Etc.) will be located at the Jefferson County Armory, where badges and programs will be issued, and matters concerning dues, changes of address, errors, etc., will be given attention.

The Information Bureau and Convention Post Office will be in connection with the Registration Bureau. Competent persons will be in charge to give any information or serve the physicians in any way possible. Ask anything you wish to know.

Be sure to register before attending the sessions.

Members of the Association are requested to bring their membership receipt (blue) card and present it when registering. This will greatly facilitate the registration.

ALUMNI REUNIONS

Thursday, November 14, 7:00 p. m.

Thursday evening has been set aside for Alumni Reunions. *Something new, something different, and something bigger than ever before will be the offering this year. Do not fail to attend.* All schools will meet together for dinner at the Brown Hotel, Crystal Ballroom. During and following the dinner there will be a program of songs, instrumental music and entertainment of different kinds. While the evening is yet young the various school groups, under the leadership of the local Chairman, will retire to individual rooms for such further activities as each school may wish. Dr. Wilson Smock, Brown Building, Louisville, is Chairman of the Alumni Reunion Committee.

Here follow the names of the schools for which arrangements have been made for meeting rooms, following the dinner, with the name and the address of the local physician who will act for each school group:

University of Louisville School of Medicine, Louisville, (Mr.) Leslie Shively, Alumni Secretary, Campus, University of Louisville.

Vanderbilt University School of Medicine, Nashville, Albert E. Leggett, Breslin Building.

University of Tennessee College of Medicine, Memphis, Jos. H. Green, 1319 Catalpa Street.

Tulane University School of Medicine, New Orleans, Edwin P. Solomon, Heyburn Building.

University of Virginia Department of Medicine, Charlottesville, and Medical College of Virginia, Richmond (joint reunion), John T. Bate, Heyburn Building.

Washington University School of Medicine, St. Louis, Robt. F. Monroe, Heyburn Building.

St. Louis University School of Medicine, St. Louis, Marinus H. Pulskamp, Brown Building.

Johns Hopkins University School of Medicine, Baltimore, Owsley Grant, Heyburn Building.

University of Maryland School of Medicine, Baltimore, Jos. M. Frehling, Breslin Building.

Emory University School of Medicine, Atlanta, Richard M. Goldsborough, 2900 Frankfort Avenue.

University of Georgia School of Medicine, Augusta, Courtland Beeler, Blue Grass Avenue.

Baylor University College of Medicine, Dallas, Geo. F. Archer, Jr., 502 North Twentieth Street.

University of Texas Faculty of Medicine, Galveston, R. Alexander Bate, Jr., Brown Building.

University of Oklahoma School of Medicine, Oklahoma City, Richard R. Elmore, 525 South Second Street.

University of Arkansas School of Medicine, Little Rock, Augustus J. Pauli, 444 East Oak Street.

University of Pennsylvania School of Medicine, Philadelphia, James W. Bruce, Heyburn Building.

Jefferson School of Medicine, Philadelphia, Cleves Richardson, Francis Building.

HOTEL RESERVATIONS

Requests for hotel accommodations during the Southern Medical Association meeting should now go direct to the Hotel Committee, Southern Medical Association, Dr. James H. Pritchett, Chairman, 421 West Market Street, Room 413, Louisville, Kentucky. In writing for reservation one should indicate the kind and price of accommodation desired and the day and time of day he expects to arrive in Louisville.

FRATERNITY LUNCHEONS

Thursday, November 14, 12:30 noon

All fraternity luncheons will be held Thursday noon. The names of the fraternities that will have luncheons are here given with the name and address of the Louisville physician who will represent each group and the place where the luncheon will be held. Dr. Dougal M. Dollar, 706 Heyburn Building, Louisville, is Chairman in Charge of Fraternity Luncheons. Arrangements will be made for other fraternities not listed if they wish a luncheon and the Chairman is notified.

Alpha Kappa Kappa, Arthur L. Juers, 412 Heyburn Building, Seelbach Hotel, Ballroom.

Phi Delta Epsilon, Bernard Schneider, 1801 Algonquin Parkway, Brown Hotel, Derby Room.

Phi Chi, Henry B. Asman, 310 Brown Building, Brown Hotel, Bluegrass Room.

Phi Beta Pi, B. F. Aydelotte, 1110 Francis Building, Kentucky Hotel, Colonel's Room.

TRANSPORTATION

Eight trunk line railroads radiating in all directions make Louisville one of the most accessible cities in the territory of the Southern Medical Association. There will be no special trains nor special convention rates available for the Louisville meeting, the present low round trip rate of 2¼c a mile each way, good in pullman, with a limit of thirty days, being comparable to special train rates in the past.

Affording the usual saving in time, two well-known air lines, Eastern and American, make Louisville convenient for the air-minded physicians living on the various terminals of these two air transportation companies.

A splendid system of highways, made more delightful by Kentucky's exhilarating fall climate, will induce a great many to make the trip by motor or bus. To further enhance the pleasure of a trip by motor are many interesting and historic points that portray the mettle of the founders of the Blue Grass State.

TECHNICAL EXHIBITS

Armory

To make the annual meetings more enjoyable for attending physicians, a new policy governing Technical or so-called Commercial Exhibits was made effective prior to the annual meeting last year. Basis for this policy adoption lies in the conviction of the Association management that Technical Exhibits of the better class contribute much in scientific and educational value to a well-rounded medical meeting.

The policy briefly summarized is an effort to do away with (1) selling, (2) sampling, and (3) souvenir collecting, so that the whole atmosphere of the exhibit will be that of show and demonstration and not of merchandising or commercialism.

(1) There is to be no selling; however, should a physician of his own accord request that an item on display be sent to him, it will be agreeable for the exhibitor to book his order—*the technical exhibits are at the meeting for the benefit of the attending physicians.*

(2) Samples cannot be displayed and are to be given away only when specifically requested. Should a physician call at an exhibit and express definite interest in a product and request a sample and/or literature, it will be permissible for such sample and/or literature to be given. It will be permissible for those calling at exhibits to have their names taken for samples and literature to be sent from the home office of the exhibitor. Reprints, literature and clinical data about products may be displayed within the exhibit, but such material cannot be passed out to the visitor or passer-by except upon request.

(3) Souvenirs of any description cannot be given away at any exhibit, at any point in the Armory, or at section meeting places.

This policy is the result of several years' careful observation at our meetings, and those of other organizations, and it is felt that a more wholesome understanding between the attending phy-

sicians and commercial houses will inevitably develop with its adoption.

An exhibit floor void of objectionable commercialism, free from carnival-like prize collecting, and devoted to professional enlightenment and improvement will prove an appreciable aid in maintaining and improving the physicians' respect for technical exhibits and the houses represented.

The object is to make the Technical Exhibits more definitely a scientific and educational part of the Southern Medical Association meetings and therefore worth definitely more to attending physicians.

Be sure to visit the Technical Exhibits.

HOBBY EXHIBITS

Armory

In addition to the usual scientific activities of the Association, there is to be at Louisville for the first time a Hobby Exhibit, this to be a feature of the annual meetings in the future. A delightful diversion from medicine to physicians' playthings is assured by this exhibit of physicians who are amateur artists, sculpturers, photographers, collectors, *et cetera*. Dr. Jesshill Love, Brown Building, Louisville, is Chairman of the Hobby Exhibit. Here follow the names of the physicians who, at the time this program went to press, had offered some of their hobby work for the exhibit:

Dr. VICTOR ALFARO, Washington, D. C.: Paintings in Oil.

Dr. J. A. BISHOP, Jeffersontown, Ky.: Butterfly Collection of Kentucky.

Dr. IRVING BROTMAN, Washington, D. C.: Photographs.

Dr. W. O. BULLOCK, Lexington, Ky.: Sculpture.

Dr. JOSEPH D. CIERI, St. Louis, Mo.: Wood Carving.

Dr. R. HAYES DAVIS, Louisville, Ky.: Photographs.

Dr. NORA DEAN, Louisville, Ky.: Paintings in Oil.

Dr. ETHEL C. DUNHAM, Washington, D. C.: Paintings in Water Color.

Dr. LUCIEN Y. DYRENFORTH, Jacksonville, Fla.: Autolicense Plates.

Dr. JAMES O. FITZGERALD, JR., Richmond, Va.: Photographs.

Dr. LESLIE H. FRENCH, Washington, D. C.: Photographs.

Dr. WILLIAM D. GILL, San Antonio, Tex.: Paintings, Oil and Water Color.

Dr. ROBERT J. GRIFFIN, Lexington, Ky.: Photographs.

Dr. SIDNEY E. JOHNSON, Louisville, Ky.: Photographs.

EXCERPTS FROM THE BY-LAWS

Sec. 3. Except by special order, the order of exercises, papers and discussions as set forth in the official program will be followed from day to day until it has been completed, and all papers omitted will be recalled in regular order.

Sec. 4. No address or paper before the Association, or any of its sections, except the addresses of the President and Orators, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than one time on any subject, provided each essayist be allowed ten minutes in which to close the discussion.

Sec. 5. All papers before the Association, or any of its sections, shall be the property of the Association. Each paper shall be deposited with the Secretary when read, or within ten days thereafter.

Sec. 6. No paper shall be published except upon recommendation of the Publication Committee, which shall consist of the Secretary as Chairman, with the Chairman and Secretary of each section as its constant members.

Dr. W. O. JOHNSON, Louisville, Ky.: Charcoal Drawing.

Dr. IRVING F. KANNER, Lexington, Ky.: Photographs.

Dr. CHARLES N. KAVANAUGH, Lexington, Ky.: Photographs.

Dr. H. L. D. KIRKHAM, Houston, Tex.: Paintings in Oil.

Dr. L. A. DE TOLENDAL LALLY, Baltimore, Md.: Paintings in Oil.

Dr. JESSHILL LOVE, Louisville, Ky.: Pastel.

Dr. H. SHELTON MANN, Louisville, Ky.: Lipstick Drawing.

Dr. J. M. MARTIN, Dallas, Tex.: Photographs.

Dr. F. A. MARTINEZ, Bethesda, Md.: Paintings in Oil.

Dr. GEORGE H. NOBLE, JR., Atlanta, Ga.: Sculpture.

Dr. R. DOUGLAS SANDERS, Louisville, Ky.: Photographs.

Dr. FREDERICK O. SCHWARTZ, St. Louis, Mo.: Paintings in Oil.

Dr. A. THORNTON SCOTT, Lexington, Ky.: Photographs.

Dr. WILSON SMOCK, Louisville, Ky.: Woodcraft.

Dr. LLOYD M. SOUTHWICK, Edinburg, Tex.: Photographs.

Dr. FRANCIS G. SPEIDEL, Washington, D. C.: Cartoons, "Political Control of Practice of Medicine."

Dr. R. GLEN SPURLING, Louisville, Ky.: Photographs.

Dr. CARROL C. TURNER, Memphis, Tenn.: Photographs.

Dr. PAUL A. TURNER, Louisville, Ky.: Photographs.

Dr. EUGENE R. WHITMORE, Washington, D. C.: Photographs.

Dr. J. G. WILSON, Frankfort, Ky.: Paintings in Oil.

Dr. JAMES A. WINTER, Louisville, Ky.: Stamp Collection.

SCIENTIFIC EXHIBITS

Armory

Exhibits will be open Tuesday, Wednesday, Thursday and Friday, November 12-15, from 8:00 a. m. until 6:00 p. m., except Friday, when they will close at 1:00 p. m. In this Preliminary Program the exhibits are listed alphabetically. In the Official Program they will be arranged according to scientific subjects. Here follow the scientific exhibits offered up to the time this program went to press:

Dr. OLIVER ABEL, JR., and Dr. WALTER J. SIEBERT, St. Louis, Mo.: Fibrositis.

Dr. WM. MILTON ADAMS, University of Tennessee College of Medicine, Memphis, Tenn.: Plastic Surgery.

ADVISORY BOARD FOR MEDICAL SPECIALTIES, Dr. Paul Titus, Secretary, Pittsburgh, Pa.: Work of the Advisory Board for Medical Specialties.

Dr. J. D. ALLEN and Dr. MARION BEARD, Kentucky Baptist Hospital, Louisville, Ky.: Bone Marrow Studies in Diseases of the Blood and Lymphatics.

AMERICAN ASSOCIATION OF MEDICAL SOCIAL WORKERS, Chicago, Ill.: Medical Social Work.

AMERICAN COLLEGE OF SURGEONS, Chicago, Ill.: Cancer Record Forms.

AMERICAN COMMITTEE ON MATERNAL WELFARE, INC., Chicago, Ill.: Educational Material Dealing with Maternal Welfare.

AMERICAN HEART ASSOCIATION, New York, N. Y.: Educational Material.

AMERICAN SOCIAL HYGIENE ASSOCIATION, New York, N. Y.: Diagnosis, Treatment and Control of Gonococcal Infections.

Dr. GRAHAM ASHER, University of Kansas School of Medicine, Kansas City, Kan., and Dr. FRANK E. HOECKER, (Ph.D.), University of Kansas City, Kansas City, Mo.: Surface Potentials During Cardiac Systole.

Dr. LYTLE ATHERTON and Dr. W. CURRY MARTIN, Louisville, Ky.: Renal Tumors.

Dr. W. B. ATKINSON, Campbellsville, Ky.: Improvised Apparatus.

Dr. HARRY E. BACON, Temple University School of Medicine; and Graduate School, University of Pennsylvania School of Medicine, Philadelphia, Pa.: Anorectal Operative Procedures with Reference to the Avoidance of Pain.

Dr. E. E. BARKSDALE, Danville, Va., and Dr. DUDLEY C. SMITH, Charlottesville, Va.: Sources of Arsenic in Dermatitis, with Special Reference to Tobacco.

Dr. B. T. BEASLEY, Atlanta, Ga.: Pelvic Mechanics: Intravaginal Pressure and Heat Therapy in the Treatment of Retrodisplacements and Moderate Genital Prolapse.

Dr. ROBERT BRANDT, Dr. RICHARD TORPIN, Dr. E. S. SANDERSON and Dr. ROBERT GREENBLATT, University of Georgia School of Medicine, Augusta, Ga.: Treatment of the Newer Venereal Diseases.

Dr. BENJAMIN L. BROCK and Dr. LAWRENCE W. NEHIL, Waverly Hills Sanatorium, Louisville, Ky.: Results of Surgery in Pulmonary Tuberculosis.

Dr. JAMES W. BRUCE, Dr. LEE PALMER, Dr. W. W. NICHOLSON, Dr. MARGARET LIMPER and Dr. J. KELLER MACK, University of Louisville School of Medicine, Louisville, Ky.: Interesting X-Rays in Pediatrics.

Dr. WILLIS C. CAMPBELL and Dr. HUGH SMITH, Memphis, Tenn.: Coxa Plana.

CHILDREN'S BUREAU, U. S. Department of Labor, Washington, D. C.: (1) Osseous Development of Infants; and (2) Causes of Neonatal and Infant Mortality.

Dr. ARCH E. COLE, University of Louisville School of Medicine, Louisville, Ky.: A Working Model to Demonstrate the Anatomical Relationships of Inguinal Herniae.

COMMONWEALTH OF KENTUCKY, Department of Welfare, Dr. J. G. Wilson, Director, Division of Hospitals and Mental Hygiene, Frankfort, Ky.: Organization and Therapy in Kentucky State Hospitals.

Dr. PAUL L. DAY, Dr. WILLIAM J. DARBY and Dr. K. W. COSGROVE, University of Arkansas School of Medicine, Little Rock, Ark.: Xylose and Galactose Cataract.

Dr. J. K. DONALDSON, Dr. JOE H. SANDERLIN and Dr. WILLIAM B. HARRELL, JR., University of Arkansas School of Medicine, Little Rock, Ark.: New Method of Suspending Uterus (Without Abdominal Incision, by Use of Peritoneoscope).

Dr. LOUIS I. DUBLIN and HERBERT H. MARKS, Metropolitan Life Insurance Company, New York, N. Y., and Dr. ELLIOTT P. JOSLIN, Dr. HOWARD F. ROOT, Dr. PRISCILLA WHITE and Dr. ALEXANDER MARBLE, George F. Baker Clinic, New England Deaconess Hospital, Boston, Mass.: Diabetes in the 1940's.

Dr. L. WALLACE FRANK, Norton Memorial Infirmary, Louisville, Ky.: Gastro-Intestinal Malignancies.

Dr. MAX L. GARON and Dr. MARTIN J. HARRIS, Louisville, Ky.: Prognosis in Childhood Tuberculosis.

Dr. R. B. H. GRADWOHL, St. Louis, Mo., and A. A. KRAJIAN, Los Angeles, Calif.: Histopathological Technic.

Dr. OWSLEY GRANT and Dr. ROBERT LICH, JR., University of Louisville School of Medicine, Louisville, Ky.: Aids in Diagnosing Renal Diseases.

Dr. ROBERT B. GREENBLATT and Dr. RICHARD TORPIN, University of Georgia School of Medicine, Augusta, Ga.: Clinical and Experimental Evaluation of the Gonadotropic Hormones.

Dr. R. ARNOLD GRISWOLD, Dr. ERNEST C. STRODE and Dr. DENMAN C. HUCHERSON, University of Louisville School of Medicine, Louisville, Ky.: Fractures of the Humerus.

Dr. HENRY G. HADLEY, Washington, D. C.: Effect of Tobacco on Longevity, Circulatory System, Height, Weight and Metabolism.

Dr. HOWARD HAILEY and Dr. HUGH HAILEY, Emory University School of Medicine, Atlanta, Ga.: (1) Pruritus Ani et Vulvae (Eczema); (2) Lesions of the Lip and Oral Cavity; and (3) Syphilis.

Dr. FRED HAMES, Pine Bluff, Ark.: Moulages of Malignant and Other Lesions.

Dr. JOSEPH E. HAMILTON, University of Louisville School of Medicine, Louisville, Ky.: Newer Applications of Peritoneoscopy.

Dr. FRENCH K. HANSEL, St. Louis, Mo.: Hay Fever: Botanical and Clinical Aspects.

Dr. SEALE HARRIS, Birmingham, Ala.: (1) Genesis of Pellagra, (2) Pellagra, Pernicious Anemia and Sprue, and (3) Dietary Management of Pellagra.

Dr. ONIS GEORGE HAZEL and Dr. C. R. ROUNTREE, University of Oklahoma School of Medicine, Oklahoma City, Okla.: Syphilis of the Skeletal System.

Dr. HERBERT E. HIPPS, Marlin, Tex.: Muscle Pathology in Anterior Poliomyelitis.

Dr. J. M. HITCH, Raleigh, N. C., and N. F. CONANT (Ph.D.), Duke University School of Medicine, Durham, N. C.: Fungous Infections of the Skin and Mucous Membranes Occurring in North Carolina.

JEFFERSON COUNTY HEALTH DEPARTMENT, Louisville, Ky.: Activities of the County Health Department.

Dr. SYDNEY E. JOHNSON, University of Louisville School of Medicine, Louisville, Ky.: (1) Constrictive Adhesive Pericarditis, and (2) Fibrocystic Disease (Parathyroid), with Results of Parathyroidectomy.

Dr. LOUIS H. JORSTAD, St. Louis, Mo.: Diagnosis and Treatment of Benign and Malignant Tumors of the Head and Neck.

Dr. DAVID Y. KEITH, Dr. JOHN PAUL KEITH and Dr. E. LEE SHIFLETT, Louisville, Ky.: (1) Body Section by X-Ray, and (2) Radiotherapy in Resistant Carcinoma.

Dr. WILLIAM K. KELLER, University of Louisville School of Medicine, Louisville, Ky., and Dr. LOUIS M. FOLTZ, Central State Hospital, Lakeland, Ky.: Bromide Intoxication.

Dr. JOSEPH W. KELSO, University of Oklahoma School of Medicine, Oklahoma City, Okla.: Analysis of One Thousand Hysterectomies.

KENTUCKY PHARMACEUTICAL ASSOCIATION, Interprofessional Relations Committee, John G. Krul, Chairman, Louisville, Ky.: Official Medicines.

KENTUCKY STATE DEPARTMENT OF HEALTH, Louisville, Ky.: Activities of the Laboratory, Social Hygiene, Epidemiology and Public Health Education Divisions.

Dr. PETER K. KNOEFEL, University of Louisville School of Medicine, Louisville, Ky.: Current Trend in Pharmacology and the Pharmacopeia.

Dr. HAMPDEN C. LAWSON, University of Louisville School of Medicine, Louisville, Ky.: Effect of Distention on Blood Flow Through the Intestine.

Dr. A. L. LEVIN (deceased), Dr. MORRIS SHUSHAN and (Mr.) WM. BRANKS STEWART, Louisiana State University School of Medicine, New Orleans, La.: Present Status of Gastroscopy.

Dr. EDWARD M. LIVINGSTON, New York University College of Medicine, and Dr. GEORGE T. PACK, Cornell University College of Medicine, New York, N. Y.: Endogastric Applicators in the Treatment of Cancer of the Stomach.

LOUISVILLE HEALTH DEPARTMENT, Louisville, Ky.: Activities of the Louisville Health Department.

Dr. JESSHILL LOVE, St. Joseph Infirmary, Louisville, Ky.: Advantages of Direct X-Ray Irradiation.

Dr. ADOLPH B. LOVEMAN, Louisville, Ky.: Color Photography in Dermatology and Syphilology.

Dr. PAUL MAPOTHER, Louisville, Ky., and F. F. DINSMORE (B.S.), Boston, Mass.: Types of Hutchinson's Teeth.

Dr. WILLIAM J. MARTIN, JR., Dr. JOSEPH C. BELL and Dr. PAT R. IMES, Norton Memorial Infirmary, Louisville, Ky.: Polypoid Lesions of the Large Bowel.

Dr. A. J. MILLER, University of Louisville School of Medicine, Louisville, Ky.: Brain Tumors.

MISSOURI STATE HEALTH DEPARTMENT, Jefferson City, Mo.: Maternal Care.

Dr. JOHN WALKER MOORE and Dr. J. MURRAY KINSMAN, University of Louisville School of Medicine, Louisville, Ky.: (1) Absorption and Excretion of Sulfapyridine and Sulfathiazole; and (2) The Dye-Injection Method of Studying the Circulation.

Dr. R. O. MUETHER, St. Louis University School of Medicine, St. Louis, Mo., and Dr. R. K. ANDREWS, Lexington, Ky.: Studies on Stored Blood.

Dr. W. AMBROSE McGEE, Richmond, Va.: Childhood Allergic Problems.

Dr. ALTON OCHSNER, Tulane University School of Medicine, New Orleans, La., and Dr. WOOLFOLK BARROW, Lexington, Ky.: Treatment of Appendiceal Peritonitis.

Dr. CHAS. B. ODOM and Dr. M. C. KOLCZUN, Louisiana State University School of Medicine, New Orleans, La.: Treatment of Idiopathic Sciatica by Epidural Injection.

Dr. NEAL OWENS and Dr. RICHARD VINCENT, Tulane University School of Medicine, New Orleans, La.: Plastic Surgery.

Dr. R. J. REEVES and Dr. W. S. WALLACE, Duke University School of Medicine, Durham, N. C.: Bronchomycosis.

REGISTRY OF MEDICAL TECHNOLOGISTS, American Society of Clinical Pathologists, Denver, Col.: Registration of Medical Technologists.

Dr. H. M. ROBINSON, Dr. JOSEPH C. BERNSTEIN and Dr. H. M. ROBINSON, JR., University of Maryland School of Medicine, Baltimore, Md.: Tuberculosis of the Skin.

Dr. FRED F. RUDDER, Atlanta, Ga.: Apparatus for Administering Intravenous Anesthetic Agents; Pentothal Sodium.

Dr. C. E. SANDERS, Kansas City, Mo.: Effects of Gravity on the Human Body; Demonstration of the Vasoscillator and Intermittent Venous Occlusion.

Dr. LOUIS SCHWARTZ and Dr. LEON HUGH WARREN, U. S. Public Health Service, Washington, D. C.: Industrial Dermatoses.

Dr. ROBERT V. SELIGER, Johns Hopkins University School of Medicine, Baltimore, Md.: Chronic Alcoholism: Psychiatric Approach.

SHEPPARD AND ENOCH PRATT HOSPITAL, Occupational Therapy Department, Towson, Md.: Occupational Therapy Activities at a Psychiatric Hospital.

Dr. J. GARLAND SHERRILL, University of Louisville School of Medicine, Louisville, Ky.: Surgery Through Three Decades.

Dr. FRANK A. SIMON, University of Louisville School of Medicine, Louisville, Ky.: Allergy.

SOUTHERN SOCIETIES OF MEDICAL TECHNOLOGISTS, Louisville, Ky.: Medical Technologists, Their Organizations, Educational Requirements, Aims, Ideals, Etc.

Dr. R. GLEN SPURLING and Dr. EVERETT G. GRANTHAM, University of Louisville School of Medicine, Louisville, Ky.: Ruptured Intervertebral Disks in the Lower Lumbar Region.

Dr. W. CALHOUN STIRLING and Col. J. E. ASH, Washington, D. C.: Cystic Lesions of the Urinary Tract.

Dr. V. P. SYDENSTRICKER, University of Georgia School of Medicine, Augusta, Ga.: Common Vitamin Deficiencies.

Dr. HENRY H. TURNER, University of Oklahoma School of Medicine, Oklahoma City, Okla.: Clinical Endocrinology.

UNITED STATES PUBLIC HEALTH SERVICE HOSPITAL, Lexington, Ky.: Treatment and Study of Drug Addiction.

UNITED STATES PUBLIC HEALTH SERVICE, Venereal Disease Division, Washington, D. C.: Gonorrhea in the Male: Results of Treatment with Sulfanilamide.

Dr. CHARLES S. VENABLE and Dr. WALTER G. STUCK, San Antonio, Tex.: Use of Vitallium Appliances in Fractures.

VIRGINIA STATE DEPARTMENT OF HEALTH, Richmond, Va.: Activities of the Virginia State Department of Health.

Dr. CURT VON WEDEL and Dr. STEPHEN S. ELLIS, Oklahoma City, Okla.: Plastic Surgery.

Dr. EXUM WALKER, Emory University School of Medicine, Atlanta, Ga.: Relief of Pain by Neurosurgical Methods.

Dr. MORRIS M. WEISS, Louisville, Ky.: Heart Rate During Sleep, Normal and Diseased States.

Dr. AUGUST A. WERNER, St. Louis University School of Medicine, St. Louis, Mo.: Clinical Endocrinology.

Dr. CHARLES STANLEY WHITE, Dr. J. LLOYD COLLINS and Dr. J. WEINSTEIN, George Washington University School of Medicine, Washington, D. C.: Transfusions with Preserved Blood and Plasma: Clinical Results.

WOMAN'S FIELD ARMY, Kentucky Division, American Society for the Control of Cancer, Louisville, Ky.: Cancer Control.

Dr. BUFORD WORD, Birmingham, Ala.: Construction of an Artificial Vagina.

Dr. W. H. WRIGHT, National Institute of Health, Washington, D. C.: The Public Health Aspects of Trichinosis.

MOTION PICTURES

Armory

There will be a special motion picture program Wednesday and Thursday, November 13-14, forenoons and afternoons. Here follow alphabetically the motion picture films offered at the time this program went to press. In the Official Program for use at the meeting the time the films will run will be given. There will be a voluntary period each day during which any film on the program may be run upon request.

Dr. WM. MILTON ADAMS, University of Tennessee College of Medicine, Memphis, Tenn.: Complete Reconstruction of the Vagina.

Dr. HARRY E. BACON, Temple University School of Medicine; and Graduate School, University of Pennsylvania School of Medicine, Philadelphia, Pa.: Anorectal Operative Procedures.

Dr. JAMES BARRETT BROWN and Dr. FRANK McDOWELL, Washington University School of Medicine, St. Louis, Mo.: The Application of Thick Skin Grafts.

Dr. J. LAMAR CALLAWAY and Dr. NORMAL F. CONANT (Ph.D.), Duke University School of Medicine, Durham, N. C.: The Diagnosis and Management of Cutaneous Blastomycosis.

Dr. LOUIS DAILY, Houston, Tex.: Refinements in the Technic of the Radical Mastoid Operation and Original Flap.

Dr. RAY K. DAILY, Houston, Tex.: Ophthalmic Operations.

Dr. LOUIS I. DUBLIN and HERBERT H. MARKS, Metropolitan Life Insurance Company, New York, N. Y., and Dr. ELLIOTT P. JOSLIN, Dr. HOWARD F. ROOT, Dr. PRISCILLA WHITE and Dr. ALEXANDER MARBLE, George F. Baker Clinic, New England Deaconess Hospital, Boston, Mass.: Education of Diabetic Patients.

Dr. EUGENE T. ELLISON, Greenville, Miss.: Technic and Indications for Extraperitoneal Cesarean Section.

Dr. HUGH A. GAMBLE, Greenville, Miss.: Treatment of Cancer of the Breast with Cautery Technic.

Dr. R. ARNOLD GRISWOLD, University of Louisville School of Medicine, Louisville, Ky.: Functional Treatment of Fractures.

Dr. JOSEPH E. HAMILTON, University of Louisville School of Medicine, Louisville, Ky.: Peritoneoscopy.

Dr. KARL JOHN KARNAKY, Houston, Tex.: (1) Leukorrhea: Its Causes and Treatment, and (2) Sterility in Humans: Its Causes and Treatment.

Dr. ERASMUS H. KLOMAN, Baltimore, Md.: Operative Repair of Vesicovaginal Fistula.

Dr. CHAS. B. ODOM and Dr. M. C. KOLCZUN, Louisiana State University School of Medicine, New Orleans, La.: Treatment of Idiopathic Sciatica by Epidural Injection.

Dr. JOHN ROBERTS PHILLIPS, Houston, Tex.: The Technic of Total Abdominal Hysterectomy.

Dr. D. HENRY POER, Atlanta, Ga.: Diagnosis and Treatment of Peripheral Vascular Conditions.

Dr. R. H. RIGDON, University of Tennessee College of Medicine, Memphis, Tenn.: Experimental Studies on Inflammation.

Dr. FRED F. RUDDER, Atlanta, Ga.: Apparatus for Administering Intravenous Anesthetic Agents.

Dr. JULIAN M. RUFFIN and Dr. DAVID T. SMITH, Duke University School of Medicine, Durham, N. C.: The Treatment of Pellagra with Nicotinic Acid and Related Compounds.

UNITED STATES PUBLIC HEALTH SERVICE, Venereal Disease Division, Washington, D. C.: Three Counties Against Syphilis.

UNITED STATES PUBLIC HEALTH SERVICE, National Cancer Institute, Washington, D. C.: Choose to Live.

Dr. OTTO J. WILHELMI, St. Louis, Mo.: Refinements in Technic Imperative for Successful Transurethral Prostatectomy.

Dr. BUFORD WORD, Birmingham, Ala.: The Construction of an Artificial Vagina.

GENERAL SESSION

Public

Louisville Memorial Auditorium

Tuesday, November 12, 8:00 p. m.

Dr. Arthur T. McCormack, Louisville, President, presiding after introduction by the General Chairman, Dr. E. L. Henderson, Louisville.

Addresses limited to twenty-five minutes.

Music.

Address of Welcome, His Excellency, HON. KEEN JOHNSON, Governor of Kentucky, Frankfort.

"Syphilis Control in National Preparedness," JAMES E. PAULLIN, Atlanta, Ga.

"The Responsibility of Medicine in War and Peace," IRVIN ABELL, United States Coordinator of Medical Preparedness, Louisville, Ky.

"Society's Debts to the Doctor," REV. ALPHONSE M. SCHWITALLA, S.J., Ph.D., Dean, St. Louis University School of Medicine, St. Louis, Mo.

Adjournment.

GENERAL SESSION

PRESIDENT'S NIGHT

Brown Hotel, Crystal Ballroom

Wednesday, November 13, 8:00 p. m.

Music.

Call to order by the Chairman of the Committee on Arrangements, E. L. HENDERSON, Louisville.

Invocation, REV. HENRY H. SWEETS, D.D., LL.D., Southern Presbyterian Church, Louisville.

Address of Welcome in behalf of the Jefferson County (Louisville) Medical Society, E. LEE HEFLIN, President, Louisville.

Address of Welcome in behalf of the Kentucky State Medical Association, AUSTIN BELL, President, Hopkinsville.

Response to the Addresses of Welcome in behalf of the Southern Medical Association, WILLIAM H. MYERS, Savannah, Ga.

Introduction of President by the General Chairman.

Introduction of Presidents.

Presentation of Research Medal.

President's Address: "The Great Physician," ARTHUR T. McCORMACK, Louisville.

Installation of Incoming President, QUITMAN U. NEWELL, St. Louis, Mo.

New and Unfinished Business.

Announcements.

Adjournment for President's Reception and Ball.

Music.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 2

MEDICINE—Section A

GENERAL MEDICINE

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 10:00 a. m.

Armory, Room No. 2

Gavin Fulton and W. E. Gardner, presiding

1. "Nephritis," FREDERICK SPEIDEL, Louisville.
2. "Acute Suppression of Urine Occurring Late in Pregnancy and Following Labor," CHARLES E. GAUPIN, Louisville.
3. "Intravenous Urography in Diagnosis of Urinary Tract Disease," E. L. SHIFLETT, Louisville.
4. "Suggestions in Geriatrics" (Lantern Slides), R. R. ELMORE, Louisville.
5. "Routine Blood and Spinal Fluid Bromide Determinations on a Psychiatric Service," WILLIAM K. KELLER, Louisville.
6. "The Use of Gold in Treatment of Arthritis," A. CLAYTON McCARTY, Louisville.
7. "An Evaluation of Fever Therapy," DAVID E. JONES, Louisville.
8. "X-Ray Therapy in Infections" (Lantern Slides), DAVID Y. KEITH, Louisville.
9. "General Dental Caries and Nutrition," J. T. O'ROURKE (D.D.S.), Louisville.

Adjournment for lunch.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 4

MEDICINE—Section B

PEDIATRICS

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 10:00 a. m.

Armory, Room No. 4

Philip F. Barbour and L. P. Spears, presiding

PEDIATRICS

1. "Intracranial Hemorrhage of New Born," JAMES W. BRUCE, Louisville.

2. "Present Status Immunization in Childhood," JAMES H. PRITCHETT, Louisville.

3. "The Prognosis in Childhood Tuberculosis" (Lantern Slides), MAX L. GARON and M. J. HARRIS, Louisville.

4. "Acute Laryngotracheobronchitis" (Lantern Slides), J. SAM BUMGARDNER, Louisville.

5. "Acute Rheumatic Fever," W. W. NICHOLSON, Louisville.

6. "Allergy in Childhood," LEE PALMER, Louisville.

7. "The Premature in the Private Hospital," HARRY S. ANDREWS, Louisville.

8. "Child Feeding in Low Income Groups," OWEN S. OGDEN, Louisville.

Adjournment for lunch

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 2

MEDICINE—Section A

GENERAL MEDICINE

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Armory, Room No. 2

E. Lee Heflin and John J. Moren, presiding

1. "Practical Aspects of Allergic Diagnosis," FRANK SIMON, Louisville.

2. "Vitamins" (Lantern Slides), A. W. HOMBERGER, Louisville.

3. "Hypoglycemia and Hyperinsulinism," MORRIS THOMPSON, Louisville.

4. "Epilepsy: A Neurological Problem," R. GLEN SPURLING, Louisville.

5. "Pathology of One Thousand Consecutive Appendices," HARRY M. WEETER, Louisville.

6. "Management of Pneumonia in the Home," H. ARCH HERZER, Louisville.

7. "Comparative Effects of Sulfapyridine and Sulfathiazole in the Treatment of Lobar Pneumonia" (Lantern Slides), J. MURRAY KINSMAN, Louisville.

8. "Acute Bacterial Endocarditis: A Study" (Lantern Slides), HARRY S. FRAZIER, Louisville.

9. "The Nervous Patient," R. HAYES DAVIS, Louisville.

10. "Medical Treatment of Hypertension" (Lantern Slides), MORRIS FLEXNER, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 4

MEDICINE—Section B

GENERAL MEDICINE

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Armory, Room No. 4

John Walker Moore and Virgil E. Simpson, presiding

1. "The Pathogenesis and Localization of Pulmonary Tuberculosis," BENJAMIN L. BROCK, Louisville.

2. "Diagnostic Use of the Bronchoscope" (Lantern Slides), MAURICE G. BUCKLES, Louisville.

3. "Non-Tuberculous Pulmonary Infiltrations" (Lantern Slides), OSCAR O. MILLER, Louisville.

4. "X-Ray Diagnosis of Obstructive Lesions of the Bronchi," WILLIAM CURRY MARTIN, Louisville.

5. "Spontaneous Pneumothorax," E. R. GERNERT, Louisville.

6. "Modern Methods in the Treatment of Pulmonary Tuberculosis" (Lantern Slides), PAUL A. TURNER, Louisville.

7. "Surgical Treatment in Pulmonary Tuberculosis," LAWRENCE W. NEHIL, Louisville.

8. "Ohio River Pollution" (Lantern Slides), HUGH R. LEAVELL, Louisville.

9. "Practical Considerations in the Diagnosis and Treatment of Syphilis," WINSTON U. RUTLEDGE, Louisville.

10. "Cutaneous Manifestations of Systemic Diseases" (Lantern Slides), ADOLPH B. LOVEMAN, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 1

SURGERY—Section A

GENERAL SURGERY

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 10:00 a. m.

Armory, Room No. 1

J. Garland Sherrill and Granville S. Hanes, presiding

1. "Pylephlebitis" (Lantern Slides), J. DUFFY HANCOCK, Louisville.

2. "Vitamin K in Surgery," WALTER I. HUME, Louisville.

3. "The Scalenus Anticus Syndrome" (Lantern Slides), FRANKLIN JELSMA, Louisville.

4. "Use of the Miller Abbott Tube in Intestinal Obstruction," E. S. ALLEN, SR., Louisville.

5. "Modern Treatment of Burns" (Lantern Slides), JOSEPH E. HAMILTON, Louisville.

6. "Appendicitis in Children: An Analysis of the Symptoms in a Series of Cases," WM. EDGAR FALLIS, Louisville.

7. "Relation of Trauma to Inguinal Hernia," WILLIAM M. McCLARIN, Louisville.

8. "Hematogenous Osteomyelitis" (Lantern Slides), W. BARNETT OWEN, Louisville.

Adjournment for lunch.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 1

SURGERY—Section A

GENERAL SURGERY

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Armory, Room No. 1

J. B. Lukins and Louis Frank, presiding

1. "Polypoid Lesions of the Rectum and Colon" (Lantern Slides), WILLIAM J. MARTIN, JR., Louisville.
2. "The Roentgen Ray Diagnosis of Polypoid Lesions of the Large Bowel" (Lantern Slides), JOSEPH C. BELL, Louisville.
3. "The Early Diagnosis of Carcinoma of the Colon," PAT R. IMES, Louisville.
4. "Indications for Surgery of the Thyroid Gland," MALCOM THOMPSON, Louisville.
5. "The Spleen: A Surgical Consideration" (Lantern Slides), D. P. HALL, Louisville.
6. "Differential Diagnosis of Acute Abdominal Conditions and Coronary Disease," EMMET F. HORINE, Louisville.
7. "Principles of Peritoneal Drainage," H. H. HAGAN, Louisville.
8. "A Surgeon's View of the Treatment of Breast Cancer" (Lantern Slides and Motion Pictures), L. WALLACE FRANK, Louisville.
9. "Mortality of Appendicitis in Louisville," GUY AUD, Louisville.
10. "The Present Status of Gastrectomy in the Treatment of Gastric and Duodenal Ulcer," IRVIN ABELL, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Armory, Room No. 3

SURGERY—Section B

ORTHOPEDICS AND UROLOGY

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Armory, Room No. 3

E. L. Henderson and M. J. Henry, presiding

1. "The Symptomatic Treatment of Acute Epididymitis," ROBERT LICH, JR., Louisville.
2. "The Treatment of Impotence with Reference to Glandular Therapy," LYTLE ATHERTON, Louisville.
3. "Early Management of Compound Fractures," I. A. ARNOLD, Louisville.
4. "Treatment of Fractures of the Humerus with the Hanging Cast" (Lantern Slides), R. ARNOLD GRISWOLD, Louisville.
5. "Prostatic Obstruction, Appropriate Operative Procedure," OWSLEY GRANT, Louisville.
6. "Ureteral and Kidney Changes in Pregnancy with Their Sequelae" (Lantern Slides), J. A. BOWEN and JAMES STITES, Louisville.
7. "Fractures of Both Bones of the Forearm" (Lantern Slides), R. O. JOPLIN, Louisville.
8. "Management of Traumatic Wounds," A. M. McKEITHEN, Louisville.
9. "The Present Status of Treatment of Fractures of the Hip" (Lantern Slides), RICHARD T. HUDSON, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Kentucky Hotel, Georgian Room

GYNECOLOGY AND OBSTETRICS

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Kentucky Hotel, Georgian Room

Charles W. Hibbitt and Edward Speidel, presiding

1. "Stilbestrol in the Treatment of Menopausal Symptoms and Senile Vaginitis," JOHN D. GORDINIER, Louisville.
2. "Chronic Vaginitis," RUDY F. VOGT, Louisville.
3. "Injection Treatment of Varicose Veins," CHARLES M. EDELEN, Louisville.
4. "The Prophylaxis of Postpartum Hemorrhage," W. T. McCONNELL, Louisville.
5. "Toxemias of Pregnancy," S. H. STARR, Louisville.
6. "Sterility in the Female" (Lantern Slides), ROBERT F. MONROE, Louisville.
7. "Some Phases of Prenatal Care," ALICE N. PICKETT, Louisville.
8. "The Use of Progesterone in Nervous Tension States," LAMAN A. GRAY, Louisville.
9. "When Is Surgery Indicated in Functional Uterine Bleeding?" C. J. ARMSTRONG, Louisville.
10. "Limitations of Estrogen Therapy," W. O. JOHNSON, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

LOUISVILLE DAY

Kentucky Hotel, Gold Ballroom

OPHTHALMOLOGY AND OTOLARYNGOLOGY

Presentations limited to fifteen minutes with a brief intermission between each presentation. No discussion.

Tuesday, November 12, 2:00 p. m.

Kentucky Hotel, Gold Ballroom

M. C. Baker and J. Kenneth Hutcherson, presiding

1. "Conjunctivitis," A. E. LEGGETT, Louisville.
2. "Glaucoma as a Cause of Blindness: The Importance of Its Early Recognition," CLAUDE T. WOLFE, Louisville.
3. "Differential Diagnosis of Fundus Lesions" (Lantern Slides), C. DWIGHT TOWNES, Louisville.

4. "Hearing Aids," WILL R. PRYOR, Louisville.
5. "Sinusitis in Relation to General Systemic Disease" (Lantern Slides), ALBERT L. BASS, Louisville.
6. "Prevention of Deafness in Children," SHELTON WATKINS, Louisville.
7. "Is There a Substitute for Tonsillectomy?" WALTER DEAN, Louisville.
8. "Pathology of Retropharyngeal Abscess" (Lantern Slides), AURYNE E. BELL, Louisville.

Adjournment.

GENERAL CLINICAL SESSION

Joint Session with Section on Public Health

Armory, Room No. 2

Presentations limited to twenty-five minutes with a brief intermission between each presentation. No discussion.

Wednesday, November 13, 9:00 a. m.

Armory, Room No. 2

Arthur T. McCormack, President, Louisville, presiding

1. "Diagnosis and Treatment of Pellagra and Associated Nutritional Deficiencies" (Lantern Slides), TOM D. SPIES, Birmingham, Alabama, and JOHN H. KOOSER, Hyden, Kentucky.
2. "Is the Behavior of Children a Medical Responsibility?" HORTON CASPARIS, Professor of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tennessee.
3. "The Use of Blood Plasma in Surgical Shock," CHARLES STANLEY WHITE, Professor of Surgery, George Washington University School of Medicine, Washington, D. C.
4. "An American Health Program," NATHAN B. VAN ETTEN, President, American Medical Association, New York, New York.
5. "Building Health Defenses," THOMAS PARRAN, Surgeon General, United States Public Health Service, Washington, D. C.
6. "The Naval Medical Officers' Public Health Activity with Special Reference to National Defense," CHAS. S. STEPHENSON, Commander, Medical Corps, U. S. Navy; In Charge of Division of Preventive Medicine, Bureau of Medicine and Surgery, Washington, D. C.
7. "Immunization Against Infectious Diseases in the United States Army" (Lantern Slides), JAMES S. SIMMONS, Lieutenant-Colonel, Medical Corps, U. S. Army; Chief, Subdivision of Preventive Medicine, Office of the Surgeon General, U. S. Army, Washington, D. C.

11:30 a. m.—Report of Council, Report of Nominating Committee, Election of Officers and New and Unfinished Business.

12:30 noon—Adjournment.

SECTION ON MEDICINE

Armory, Room No. 2

Officers

Chairman—Henry G. Rudner, Memphis, Tenn.
Vice-Chairman—W. G. Reddick, Dallas, Tex.
Secretary—Roy H. Turner, New Orleans, La.
Hosts from the Jefferson County Medical Society—Marion F. Beard, A. D. Kennedy, Virgil E. Simpson and Frederick G. Speidel.

Wednesday, November 13, 2:00 p. m.

Armory, Room No. 2

1. "The Etiology and Treatment of Pulmonary Hemorrhage, with Especial Reference to Bleeding in Cases of So-Called 'Dry Bronchiectasis'" (Lantern Slides), PORTER PAISLEY VINSON, Richmond, Va.

   Discussion opened by Maurice G. Buckles, Louisville, Ky.
2. "Advances in Diagnosis and Treatment of Tularemia" (Lantern Slides), EMMA MOSS and J. O. WEILBAECHER, New Orleans, La.

   Discussion opened by Leon S. Lippincott, Vicksburg, Miss.
3. "Variety 'X' or Virus Pneumonia" (Lantern Slides), WARFIELD T. LONGCOPE, Baltimore, Md.

   Discussion opened by John Walker Moore, Louisville, Ky.
4. "The Prognosis of Hypertensive Heart Disease" (Lantern Slides), W. MERRITT KETCHAM, Kansas City, Mo.

   Discussion opened by Woodford B. Troutman, Louisville, Ky.
5. "The Use of Erythrol Tetranitrate as a Diuretic" (Lantern Slides), WILLIAM M. NICHOLSON and VINCENT E. MOSELEY, Durham, N. C.

   Discussion opened by Virgil E. Simpson, Louisville, Ky.
6. "Ventricular Strain: Clinical and Experimental Considerations" (Lantern Slides), H. M. WINANS, Dallas, Tex.

   Discussion opened by Rankin C. Blount, Lexington, Ky.
7. "Rheumatic Heart Disease in the South: Postmortem Studies" (Lantern Slides), T. STERLING CLAIBORNE and BERNARD P. WOLFF, Atlanta, Ga.

   Discussion opened by Emmet Field Horine, Louisville, Ky.

Thursday, November 14, 2:00 p. m.

Armory, Room No. 2

8. "Neural Myatrophy and Vitamin E" (Lantern Slides), W. de GUTIERREZ-MAHONEY, Nashvile, Tenn.

   Discussion opened by Seale Harris, Birmingham, Ala.; William Lamar Bryan, Jr., New Orleans, La.
9. "Interrelation between the Vitamin B Complex and the Anterior Lobe of the Pituitary Gland" (Lantern Slides), DON C. SUTTON, Associate Professor of Medicine, Northwestern University Medical School, Chicago, Ill.
10. "Ariboflavinosis, with Specific Reference to the Ocular Signs and Symptcms" (Lantern Slides), V. P. SYDENSTRICKER, Augusta, Ga.

    Discussion opened by Tom D. Spies, Birmingham, Ala.
11. Chairman's Address: "Psychosoma, The Mind Body Problem," HENRY G. RUDNER, Memphis, Tenn.
12. "The Storage and Use of Blood, Plasma and Serum" (Lantern Slides), R. O. MUETHER, St. Louis, Mo., and K. R. ANDREWS, Lexington, Ky.

    Discussion opened by L. W. Diggs, Memphis, Tenn.
13. "Incidence, Symptoms and Medical Management of Hiatus Hernia of the Stomach in 1,200 Gastro-Intestinal Cases" (Lantern Slides), MOISE D. LEVY and L. B. DUGGAN, Houston, Tex.

    Discussion opened by James Alto Ward, Birmingham, Ala.

Election of Officers.

SECTION ON PEDIATRICS

Kentucky Hotel, Georgian Room

Officers

Chairman—Harvey F. Garrison, Jackson, Miss.
Vice-Chairman—James W. Bruce. Louisville, Ky.
Secretary—Warren W. Quillian, Coral Gables, Fla.
Hosts from the Jefferson County Medical Society—Philip F. Barbour, James W. Bruce, W. W. Nicholson, Lee Palmer and James H. Pritchett.

Wednesday, November 13, 6:30 p. m.

Section Dinner, Brown Hotel, Roof Garden

Thursday, November 14, 9:00 a. m.

Kentucky Hotel, Georgian Room

1. "Renal Complications in Acute Gingivostomatitis in Children" (Lantern Slides), C. H. WEBB, Shreveport, La.

   Discussion opened by Lee Palmer, Louisville, Ky.; Edwin G. Schwarz, Fort Worth, Tex.

2. Chairman's Address: "Child Health, the Responsibility of the Family Physician and the Pediatrician," HARVEY F. GARRISON, Jackson, Miss.

3. "What Has Mathematics to do with Pediatrics?" (Lantern Slides), A. GRAEME MITCHELL, Rachford Professor of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, Ohio.

SYMPOSIUM ON PEDIATRIC UROLOGY

Joint Session with Section on Urology

4. Panel Discussion on Pediatric Urology

(a) "Pyuria" (Lantern Slides), JOHN E. ASHBY (pediatrist), Dallas, Tex., and JOHN M. PACE (urologist), Dallas, Texas.

(b) "Enuresis," MAY AGNESS HOPKINS (pediatrist), Dallas, Tex., and HARRY M. SPENCE (urologist), Dallas, Texas.

Friday, November 15, 9:00 a. m.

Kentucky Hotel, Georgian Room

5. "Congenital Syphilis in Only One of Twins" (Lantern Slides), FRANK R. SMITH, JR., and JOHN M. SPENCE, JR., Baltimore, Md.

Discussion opened by Philip F. Barbour, Louisville, Ky.; Ludo von Meysenbug, Daytona Beach, Fla.

6. "Thomsen's Disease" (Motion Pictures), LUTHER W. HOLLOWAY and WILLIAM H. McCULLAGH, Jacksonville, Florida.

Discussion opened by Harry S. Andrews, Louisville, Ky.; James C. Overall, Nashville, Tenn.

7. "Common Nutritional Fallacies," WM. WESTON, Columbia, South Carolina.

Discussion opened by Aaron A. Shaper, Louisville, Ky.; Seale Harris, Birmingham, Ala.

8. "Recurrent Gastro-Intestinal Disturbances of Early Infancy," W. AMBROSE McGEE, Richmond, Va.

Discussion opened by James W. Bruce, Louisville, Ky.; M. Hines Roberts, Atlanta, Ga.

9. "The Chemotherapy of Acute Bacillary Dysentery" (Lantern Slides), SAMUEL F. RAVENEL, Greensboro, N. C., and D. LESESNE SMITH, SR., Spartanburg, S. C.

Discussion opened by Stewart H. Welch, Birmingham, Ala.; James H. Pritchett, Louisville, Ky.

10. "Congenital Cystic Lung Disease in Infancy: Report of Case" (Lantern Slides), HILLARD W. WILLIS, Coral Gables, Florida.

Discussion opened by Wm. W. Anderson, Atlanta, Ga.; W. W. Nicholson, Louisville, Ky.

Election of Officers.

SECTION ON GASTROENTEROLOGY

Armory, Room No. 2

Officers

Chairman—Chauncey W. Dowden, Louisville, Ky.
Vice-Chairman—James L. Borland, Jacksonville, Fla.
Secretary—Donovan C. Browne, New Orleans, La.
Hosts from the Jefferson County Medical Society—Morris Flexner, Ben Hollis, H. V. Noland and Sam A. Overstreet.

Thursday, November 14, 9:00 a. m.

Armory, Room No. 2

1. "This Gastritis Problem," JOHN TILDEN HOWARD and LAY MARTIN, Baltimore, Md.

Discussion opened by Julian M. Ruffin, Durham, N. C.; Cecil O. Patterson, Dallas, Tex.

2. Chairman's Address: "Biliary Disease: Clinical Aspects" (Lantern Slides), CHAUNCEY W. DOWDEN, Louisville, Ky.

3. "Gastro-Intestinal Allergy: Present Status" (Lantern Slides), ALBERT F. R. ANDRESEN, Brooklyn, N. Y.

Discussion opened by Warren T. Vaughan, Richmond, Va.; Seale Harris, Jr., Birmingham, Ala.

4. "Duodenal Obstructions" (Lantern Slides), ROBERT W. KELLEY, St. Louis, Mo.

Discussion opened by Joseph W. Larimore, St. Louis, Mo.; Dolph L. Curb, Galveston, Tex.

5. "Hematological Problems in Gastro-Intestinal Disease," THOMAS E. BUCKMAN, Jacksonville, Fla.

Discussion opened by Sam A. Overstreet, Louisville, Ky.; Joseph D'Antoni, New Orleans, La.

6. "The Treatment of Peptic Ulcer with a Magma of Magnesium Trisilicate" (Lantern Slides), DANIEL N. SILVERMAN, New Orleans, La.

Discussion opened by Walter R. Johnson, Asheville, N. C.; Jerome S. Levy, Little Rock, Ark.

Election of Officers.

Thursday, November 14, 12:30 noon

Luncheon, Pendennis Club

Chauncey W. Dowden, Chairman, presiding

7. "Clinical Manifestations of B Group Avitaminoses" (Lantern Slides), V. P. SYDENSTRICKER, Augusta, Ga.

SECTION ON PATHOLOGY

Kentucky Hotel, Parlor B

Officers

Chairman—Roy R. Kracke, Emory University, Ga.
Vice-Chairman—A. J. Miller, Louisville, Ky.
Secretary—R. H. Rigdon, Memphis, Tenn.
Hosts from the Jefferson County Medical Society—John D. Allen, Harold Gordon, A. J. Miller and Harry M. Weeter.

Wednesday, November 13, 2:00 p. m.

Kentucky Hotel, Parlor B

1. Chairman's Address: "The Diagnosis and Treatment of the Purpuric Diseases," ROY R. KRACKE, Emory University, Georgia.

2. "*In vivo* Studies of the Progressive Pathological Changes in Experimental Malaria of Monkeys: Microscopic Observations of the Changes in the Blood and Circulation in the Small Vessels of Internal Organs in Living Animals" (Motion Pictures), MELVIN H. KNISELY, WARREN E. STRATMAN-THOMAS and THEODORE S. ELIOT, Memphis, Tenn.

Discussion opened by Robert B. Watson, Wilson Dam, Ala.; Henry E. Meleney, Nashville, Tenn.

SYMPOSIUM ON SOME OF THE FACTORS INFLUENCING INFECTION AND INFLAMMATION

3. "Effect of the Female Sex Hormones on Infection and Inflammation," DOUGLAS H. SPRUNT, Durham, N. C.

4. "Effect of Vitamins on Infection and Inflammation," E. WHITE PATTON, Nashville, Tenn.

5. "Relation of Capillary Permeability to Inflammation" (Motion Pictures), R. H. RIGDON, Memphis, Tenn.

Discussion on Symposium opened by Melvin H. Knisely, Memphis, Tenn.; Wiley D. Forbus, Durham, N. C.

Thursday, November 14, 2:00 p. m.

Kentucky Hotel, Parlor B

6. "Experimental Brucellosis" (Lantern Slides), WILEY D. FORBUS and JUNE U. GUNTER, Durham, N. C.

Discussion opened by George T. Caldwell, Dallas, Tex.

7. "Sucrose Nephrosis and Other Types of Renal Tubular Injuries" (Lantern Slides), W. A. ANDERSON, St. Louis, Mo.
   Discussion opened by Robert A. Moore, St. Louis, Mo.; R. H. Rigdon, Memphis, Tenn.

8. "Food as a Factor in Fat Necrosis" (Lantern Slides), M. PINSON NEAL, Columbia, Mo.
   Discussion opened by Harry C. Schmeisser, Memphis, Tenn.; A. J. Miller, Louisville, Ky.

9. "A Pathologist's View of Uterine Lesions" (Lantern Slides), CLEMENT C. FENTON, Morgantown, West Va.
   Discussion opened by Laman A. Gray, Louisville, Ky.; George S. Graham, Birmingham, Ala.

10. "Carcinoma of Breast in Young Women with Breast Abscess" (Lantern Slides), GEO. Z. WILLIAMS, Richmond, Va.
    Discussion opened by Harold Gordon, Louisville, Ky.

Election of Officers.

SECTION ON NEUROLOGY AND PSYCHIATRY

Armory, Room No. 4

Officers

Chairman—Spafford Ackerly, Louisville, Ky.
Vice-Chairman—David C. Wilson, Charlottesville, Va.
Secretary—Theodore A. Watters, New Orleans, La.

Hosts from the Jefferson County Medical Society—W. E. Gardner, Franklin Jelsma, Wm. K. Keller, John J. Moren and R. Glen Spurling.

Thursday, November 14, 9:00 a. m.

Armory, Room No. 4

1. "Spontaneous Subarachnoid Hemorrhage," CARROL C. TURNER, Memphis, Tenn.
   Discussion opened by Frank H. Redwood, Norfolk, Va.; Edward F. Reaser, Huntington, West Va.

2. "Psychoses in Frontal Tumors," GILBERT C. ANDERSON, New Orleans, La.
   Discussion opened by Dick C. McCool, Memphis, Tenn.; Cobb Pilcher, Nashville, Tenn.

3. "The Hypothalamus in Neuropsychiatry" (Lantern Slides), BEVERLEY R. TUCKER, Richmond, Va.
   Discussion opened by Wilmot S. Littlejohn, Birmingham, Ala.; B. Landis Elliott, Kansas City, Mo.

4. "Treatment of the Psychoneuroses," HORACE K. RICHARDSON, Baltimore, Md.
   Discussion opened by Titus H. Harris, Galveston, Tex.; Martha W. McDonald, New Orleans, La.

5. "The Advantages and Disadvantages of a Centralized Department of Mental Health," GEORGE H. PRESTON, Baltimore, Md.
   Discussion opened by Joseph G. Wilson, Frankfort, Ky.; Oscar B. Darden, Richmond, Va.

Friday, November 15, 9:00 a. m.

Armory, Room No. 4

6. "Post-Infectious Encephalomyelitis: A Review of Cases," NICHOLAS GOTTEN and GILBERT J. LEVY, Memphis, Tennessee.
   Discussion opened by R. Glen Spurling, Louisville, Ky.; Saml. N. Snodgrass, Galveston, Tex.

7. Chairman's Address: "Trends in Psychiatric Teaching and Practice," SPAFFORD ACKERLY, Louisville, Ky.

8. "Attempts to Teach Principles of Psychiatric Interviewing," JOHN C. WHITEHORN, St. Louis, Mo.
   Discussion opened by W. E. Gardner, Louisville, Ky.; Raymond S. Crispell, Durham, N. C.

9. "The Present Status of Psychiatry and Psychiatric Treatment with Special Attention to the Coma and Convulsion Treatment," WENDELL S. MUNCIE, Baltimore, Md.
   Discussion opened by Salomon Katzenelbogen, Washington, D. C.; W. Walter Young, Atlanta, Ga.

10. "The Drug Addict as a Psychiatric Problem," ROBERT HANNA FELIX, Lexington, Ky.
    Discussion opened by Robert V. Seliger, Baltimore, Md.; G. Wilse Robinson, Kansas City, Mo.

Election of Officers.

SECTION ON RADIOLOGY

Armory, Room No. 4

Officers

Chairman—Ralph E. Myers, Oklahoma City, Okla.
Vice-Chairman—David Y. Keith, Louisville, Ky.
Secretary—W. R. Brooksher, Fort Smith, Ark.

Hosts from the Jefferson County Medical Society—Joseph C. Bell, Charles D. Enfield, I. T. Fugate, Henry C. Herrmann and D. Y. Keith.

Wednesday, November 13, 2:00 p. m.

Armory, Room No. 4

1. Chairman's Address: "The Science and Art of Cancer Therapy," RALPH E. MYERS, Oklahoma City, Okla.

2. "Experiences with Protracted Roentgen Therapy of Malignancies, Particularly of the Head and Face," D. A. RHINEHART and B. A. RHINEHART, Little Rock, Ark.
   Discussion opened by Ira H. Lockwood, Kansas City, Mo.; D. Y. Keith, Louisville, Ky.

3. "The Evolution of the X-Ray Tube" (Lantern Slides) FRANK E. HOECKER (Ph.D.), Department of Physics, University of Kansas City, Kansas City, Mo.

4. "The Role of Deep Therapy in the Treatment of Pruritus Vulvae," WM. E. EASTLAND, Oklahoma City, Okla.
   Discussion opened by Franklin B. Bogart, Chattanooga, Tennessee.

5. "Studies in Radiation Sickness: II. Vitamins and the Small Intestinal Changes in Radiation Sickness," WILLIAM S. WALLACE, Durham, N. C.
   Discussion opened by Charles L. Martin, Dallas, Tex.

6. "Body Section Radiography in the Diagnosis of Aortic Aneurysms and Mediastinal Tumors" (Lantern Slides), WENDELL G. SCOTT, SHERWOOD MOORE and THOMAS G. RUSSELL, St. Louis, Mo.
   Discussion opened by E. Lee Shiflett, Louisville, Ky.

Thursday, November 14, 2:00 p. m.

Armory, Room No. 4

7. "Vascular Birthmarks" (Lantern Slides), HAROLD G. F. EDWARDS, Shreveport, La.
   Discussion opened by J. Cash King, Memphis, Tenn.

8. "The Colon as a Focus of Infection," ELLIOTT M. HENDRICKS, Fort Lauderdale, Fla.
   Discussion opened by Joseph C. Bell, Louisville, Ky.

9. "The Roentgen Examination of the Mandibular Joint" (Lantern Slides), EDWIN C. ERNST, St. Louis, Mo.
   Discussion opened by Vincent W. Archer, University, Va.

10. "The Use of Endogastric Applicators in the Treatment of Cancer of the Stomach" (Lantern Slides), EDWARD M. LIVINGSTON, Assistant Clinical Professor of Surgery, New York University College of Medicine, New York, N. Y.

11. "Accurate Placement of Radon Seed by Suture Method" (Lantern Slides), FRED HAMES, Pine Bluff, Ark.
    Discussion opened by Horace D. Gray, Memphis, Tenn.

Election of Officers.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

Armory, Room No. 3

Officers

Chairman—Howard Hailey, Atlanta, Ga.
Vice-Chairman—A. B. Loveman, Louisville, Ky.
Secretary—John H. Lamb, Oklahoma City, Okla.
Hosts from the Jefferson County Medical Society—Robert L. Kelly, A. B. Loveman, Paul Mapother and Winston U. Rutledge.

Thursday, November 14, 9:00 a. m.

Armory, Room No. 3

1. "Acne Vulgaris: Etiology and Treatment" (Lantern Slides), RICHARD L. SUTTON, JR., Kansas City, Mo.
2. "The Prophylaxis of Acne Vulgaris," ANDREW L. GLAZE, Birmingham, Ala.
   Discussion on papers of Dr. Sutton and Dr. Glaze opened by M. T. Van Studdiford, New Orleans, La.
3. "Differential Diagnosis of Dermatoses of the Hands and Feet" (Lantern Slides), JAMES H. MITCHELL, Associate Clinical Professor of Dermatology, Rush Medical College, University of Chicago, Chicago, Ill.
4. "Use of Liver Extract in Lupus Erythematosus: A Preliminary Report," HOWARD KING and C. M. HAMILTON, Nashville, Tenn.
   Discussion opened by Onis George Hazel, Oklahoma City, Oklahoma.
5. "Observations on Atopic Dermatitis," LESLIE M. SMITH and RAYMOND P. HUGHES, El Paso, Tex.
   Discussion opened by Winston U. Rutledge, Louisville, Ky.

Friday, November 15, 9:00 a. m.

Armory, Room No. 3

6. Chairman's Address: "Pruritus Ani et Vulvae (Eczema): Further Observations and Report of Additional Cases" (Lantern Slides), HOWARD HAILEY, Atlanta, Ga.
7. "Treatment of Pruritus of the Perineum, Labia and Vagina by Newer Methods, Including Injection of Alcohol and Use of Stilbestrol and Negatol," LAWRENCE R. WHARTON, Baltimore, Md.
   Discussion opened by A. H. Lancaster, Knoxville, Tenn.
8. "Epidermolysis Bullosa Acquisita: Review and Report of a Case" (Lantern Slides), JOS. L. HUNDLEY and DUDLEY C. SMITH, University, Va.
   Discussion opened by Everett S. Lain, Oklahoma City, Okla.
9. "Experiences with the New Hydrophil Bases and Sulfonated Oils," ELMO D. FRENCH, Miami, Fla.
   Discussion opened by J. L. Pipkin, San Antonio, Tex.
10. "Clinical and Statistical Evaluation of Histaminase (Torantil) in Dermatology" (Lantern Slides), EVERETT C. FOX, Dallas, Tex.
    Discussion opened by Herbert S. Alden, Atlanta, Ga.
11. "Familial Darier's Disease" (Lantern Slides), JOSEPH M. HITCH, Raleigh, N. C.; J. LAMAR CALLAWAY, Durham, N. C.; and VINCE MOSELEY, Orangeburg, S. C.
    Discussion opened by Clinton W. Lane, St. Louis, Mo.

Election of Officers.

SECTION ON ALLERGY

Armory, Room No. 3

Officers

Chairman—Homer E. Prince, Houston, Tex.
Vice-Chairman—Marion T. Davidson, Birmingham, Ala.
Secretary—Clarence K. Weil, Montgomery, Ala.
Hosts from the Jefferson County Medical Society—Armand E. Cohen and Frank A. Simon.

Wednesday, November 13, 9:00 a. m.

Armory, Room No. 3

1. "The Atopic Factors in Urticaria" (Lantern Slides), BOEN SWINNY, San Antonio, Tex.
   Discussion opened by Charles H. Eyermann, St. Louis, Mo.; Orval R. Withers, Kansas City, Mo.
2. "Eczema in Infancy and Childhood," KATHERINE BAIN, St. Louis, Mo.
   Discussion opened by W. Ambrose McGee, Richmond, Va.; Edna S. Pennington, Nashville, Tenn.
3. "Hay Fever Plants in the South" (Lantern Slides), ROGER P. WODEHOUSE (Ph.D.), Yonkers, N. Y.
4. "Value of the Weltmann Reaction in Allergic Diseases" (Lantern Slides), SUSAN C. DEES, Durham, N. C.
   Discussion opened by O. C. E. Hansen-Pruss, Durham, N. C.; J. Harvey Black, Dallas, Tex.
5. "Allergic Conjunctivitis" (Lantern Slides), RALPH BOWEN, Houston, Tex.
   Discussion opened by C. Malone Stroud, St. Louis, Mo.; John P. Henry, Memphis, Tenn.
6. "Specific Chemotherapy in Status Asthmaticus," H. J. CLIMO, Montgomery, Ala.
   Discussion opened by Warren T. Vaughan, Richmond, Va.; Marion T. Davidson, Birmingham, Ala.

Wednesday, November 13, 12:30 noon

Round Table Luncheon Meeting, Pendennis Club

Warren T. Vaughan, Richmond, Virginia, presiding

GASTRO-INTESTINAL ALLERGY

7. "Gastro-Intestinal Allergy: Proctoscopic Observations" (Wax Models and Lantern Slides), J. WARRICK THOMAS and R. JOHN F. RENSHAW, Cleveland, Ohio.
8. "Analysis of Some Cases of Gastro-Intestinal Allergy Associated with Organic Disease," GERTRUDE R. HOLMES, Greenville, S. C.
9. "Blunders of Gastro-Intestinal Plain Muscle, Due to Allergy or Anxiety States," E. RANKIN DENNY, Tulsa, Okla.

Election of Officers.

SECTION ON SURGERY

Armory, Room No. 1

Officers

Chairman—J. M. T. Finney, Jr., Baltimore, Md.
Vice-Chairman—Claude J. Hunt, Kansas City, Mo.
Secretary—J. A. Crisler, Jr., Memphis, Tenn.
Hosts from the Jefferson County Medical Society—C. J. Armstrong, Guy Aud, Misch Casper, L. Wallace Frank, Walter I. Hume and Frank P. Strickler.

Thursday, November 14, 9:00 a. m.

Armory, Room No. 1

1. "Pilonidal Sinus" (Lantern Slides), MORTON J. TENDLER, Memphis, Tenn.
   Discussion opened by Malcom D. Thompson, Louisville, Ky.; Rufus C. Alley, Lexington, Ky.
2. "Abdominal Arterial Apoplexy" (Lantern Slides), GEORGE H. BUNCH and L. E. MADDEN, Columbia, S. C.
   Discussion opened by W. O. Bullock, Lexington, Ky.; M. Joseph Henry, Louisville, Ky.
3. "Regional Ileitis" (Motion Pictures), GEORGE R. ENLOE, Fort Worth, Tex.
   Discussion opened by Irvin Abell, Louisville, Ky.; Francis M. Massie, Lexington, Ky.

4. "Early Diagnosis and Treatment of Carcinoma of the Rectum," THOMAS E. JONES, Cleveland, Ohio.

5. "Surgery for Chronic Ulcerative Colitis: Indications and Types of Operations," FRED W. RANKIN, Lexington, Ky.
   Discussion opened by Wm. J. Martin, Jr., Louisville, Ky.; Coleman C. Johnston, Lexington, Ky.

Friday, November 15, 9:00 a. m.

Armory, Room No. 1

6. Chairman's Address: "The Doctor as a Teacher," J. M. T. FINNEY, JR., Baltimore, Md.

7. "Operation for Relief of Ascites from Hepatic Cirrhosis" (Lantern Slides), THOMAS O. OTTO, Miami, Fla.
   Discussion opened by H. Hart Hagan, Louisville, Ky.; Guy Aud, Louisville, Ky.

8. "Posterior Vaginal Hernia" (Lantern Slides), DONNELL B. COBB, Goldsboro, N. C.
   Discussion opened by John C. Burch, Nashville, Tenn.; J. B. Lukins, Louisville, Ky.

9. "Experiences with the Injection Treatment of Hernia," AMOS R. KOONTZ, Baltimore, Md.
   Discussion opened by Pat R. Imes, Louisville, Ky.; Fredk. W. Fiedler, Memphis, Tenn.

10. "Radical Operation for Severe Varicose Veins and Varicose Ulcers" (Lantern Slides), HOWARD MAHORNER, New Orleans, La.
    Discussion opened by R. Arnold Griswold, Louisville, Ky.; Lawrence W. Long, Jackson, Miss.

11. "Can the Site and Degree of Injury and the Prognosis in Head Trauma be Accurately Determined by Spinal Fluid Erythrocyte Counts?: An Experimental Study" (Lantern Slides), JOHN M. MEREDITH, University, Va.
    Discussion opened by Franklin Jelsma, Louisville, Ky.; R. Glen Spurling, Louisville, Ky.

Election of Officers.

SECTION ON BONE AND JOINT SURGERY

Armory, Room No. 1

Officers

Chairman—J. Hiram Kite, Atlanta, Ga.
Vice-Chairman—F. Walter Carruthers, Little Rock, Ark.
Secretary—Guy W. Leadbetter, Washington, D. C.
Hosts from the Jefferson County Medical Society—Harry Goldberg, Richard T. Hudson, Orville R. Miller, W. Barnett Owen and Charles F. Wood.

Wednesday, November 13, 2:00 p. m.

Armory, Room No. 1

1. "Acute Osteomyelitis with Acute Staphylococcemia" (Lantern Slides), LENOX D. BAKER, Durham, N. C.
   Discussion opened by J. Albert Key, St. Louis, Mo.; W. Barnett Owen, Louisville, Ky.

2. "Cerebral Palsy," WINTHROP M. PHELPS, Baltimore, Md.
   Discussion opened by Lenox D. Baker, Durham, N. C.; Paul C. Colonna, Oklahoma City, Okla.

3. "A Comparative Study of the Treatment of Compound Fractures" (Lantern Slides), RUTH JACKSON, Dallas, Tex.
   Discussion opened by Brandon Carrell, Dallas, Tex.; Harold R. Bohlman, Baltimore, Md.

4. Chairman's Address: "Congenital Pseudarthrosis of the Tibia and Fibula" (Lantern Slides), J. HIRAM KITE, Atlanta, Georgia.

5. "Muscle Pathology in Anterior Poliomyelitis: Its Relation to Function" (Lantern Slides), HERBERT E. HIPPS, Marlin, Texas.
   Discussion opened by Wm. B. Carrell, Dallas, Tex.; Willis C. Campbell, Memphis, Tenn.

6. "Results of Lowman Abdominal Stabilization" (Lantern Slides), GEORGE O. EATON, Baltimore, Md.
   Discussion opened by C. Edwin Irwin, Warm Springs, Ga.; Rex L. Diveley, Kansas City, Mo.

Thursday, November 14, 2:00 p. m.

Armory, Room No. 1

7. "Car Window Elbows" (Lantern Slides), HOWARD B. SHORBE, Oklahoma City, Okla.
   Discussion opened by Hugh Smith, Memphis, Tenn.; Paul H. Martin, Jacksonville, Fla.

8. "The Importance of Primary Care in the Treatment of Compound Fractures," H. WINNETT ORR, Lincoln, Neb.

9. "Treatment of Fractures of the Lower Third of the Humerus" (Lantern Slides), FRANK A. HOSHALL, Charleston, S. C.
   Discussion opened by Guy A. Caldwell, New Orleans, La.; Robt. V. Funsten, University, Va.

10. "Subtrochanteric Osteotomy for Ununited Fractures of the Neck of the Femur" (Lantern Slides), J. S. SPEED and HUGH SMITH, Memphis, Tenn.
    Discussion opened by Geo. E. Bennett, Baltimore, Md.; Guy W. Leadbetter, Washington, D. C.

11. "The Trochanteric Fracture" (Lantern Slides), HARRY D. MORRIS, New Orleans, La.
    Discussion opened by Calvin Sandison, Atlanta, Ga.; F. Walter Carruthers, Little Rock, Ark.

Election of Officers.

SECTION ON GYNECOLOGY

Kentucky Hotel, Georgian Room

Officers

Chairman—John F. Lucas, Greenwood, Miss.
Vice-Chairman—E. C. Hamblen, Durham, N. C.
Secretary—W. O. Johnson, Louisville, Ky.
Hosts from the Jefferson County Medical Society—Louis Frank, Laman A. Gray, Charles W. Hibbitt and J. B. Lukins.

Wednesday, November 13, 9:00 a. m.

Kentucky Hotel, Georgian Room

1. Chairman's Address: "Management of Pelvic Infections," JOHN F. LUCAS, Greenwood, Miss.

2. "The Treatment of Uterine Prolapse," ROBT. A. KIMBROUGH, JR., Assistant Professor of Obstetrics and Gynecology, University of Pennsylvania School of Medicine, Philadelphia, Pa.

3. "Congenital Anomalies in Female Genitalia with Operation for Bicornuate Uterus" (Lantern Slides), OREN MOORE, Charlotte, N. C.
   Discussion opened by Lawrence R. Wharton, Baltimore, Md.; Ivan M. Proctor, Raleigh, N. C.

4. "Endometriosis of the Lungs: Experimental and Clinical Study" (Lantern Slides), JOHN E. HOBBS, St. Louis, Mo.
   Discussion opened by Gerald Rogers, Oklahoma City, Okla.; Guy S. McClellan, Nashville, Tenn.

5. "The Gonadotropins: An Experimental and Clinical Study" (Lantern Slides), ROBT. B. GREENBLATT, Augusta, Ga.
   Discussion opened by Gilbert F. Douglas, Birmingham, Ala.; Harry H. Ware, Richmond, Va.

6. "Sarcoma of the Uterus," WILSON SEARIGHT, Memphis, Tennessee.
   Discussion opened by Edward L. King, New Orleans, La.; A. N. Arneson, St. Louis, Mo.

Election of Officers.

Thursday, November 14, 2:00 p. m.

Kentucky Hotel, Georgian Room

Joint Session with Section on Obstetrics

7. "Analgesia in Labor,"
   (a) EDWARD L. CORNELL, Chicago, Ill.
   (b) WM. T. PRIDE, Memphis, Tenn.
   (c) EDWARD L. KING, New Orleans, La.

8. SYMPOSIUM ON UTERINE BLEEDING
   (a) "From the Viewpoint of the Obstetrician" (Lantern Slides), N. J. EASTMAN, Baltimore, Md.
   (b) "From the Viewpoint of the Gynecologist," RICHARD TELINDE, Baltimore, Md.
   (c) "From the Viewpoint of the Endocrinologist," EMIL NOVAK, Baltimore, Md.

   Discussion on Symposium opened by Willard S. Cooke, Galveston, Tex.; F. B. Carter, Durham, N. C.; Joseph W. Kelso, Oklahoma City, Okla.; R. A. Johnston, Houston, Texas.

9. "Chorio-epithelioma: A Series of Fifteen Cases with Difficulties in Diagnosis and Management" (Lantern Slides), EARL CONWAY SMITH and D. W. GOLDMAN, New Orleans, La.

SECTION ON OBSTETRICS

Kentucky Hotel, Georgian Room

Officers

Chairman—Robert M. Anderson, Shawnee, Okla.
Vice-Chairman—Joseph W. Reddoch, New Orleans, La.
Secretary—R. A. White, Asheville, N. C.
Hosts from the Jefferson County Medical Society—W. T. McConnell, Alice N. Pickett, Henry M. Rubel, Edward Speidel and Silas H. Starr.

Wednesday, November 13, 2:00 p. m.

Kentucky Hotel, Georgian Room

1. Chairman's Address: "Centuries of Progress in Obstetrics," ROBERT M. ANDERSON, Shawnee, Okla.

2. "Treatment of Common Complications of Pregnancy," EDWARD L. CORNELL, Assistant Professor of Obstetrics, Northwestern University Medical School, Chicago, Ill.

3. "Manual Removal of the Placenta" (Lantern Slides), RUPERT E. ARNELL, New Orleans, La.
   Discussion opened by Thomas B. Sellers, New Orleans, La.; Saml. R. Norris, Jacksonville, Fla.

4. "Management of the Third Stage of Labor," J. DECHERD GUESS, Greenville, S. C.
   Discussion opened by Williamson Z. Bradford, Charlotte, N. C.; James R. Garber, Birmingham, Ala.

5. "Cesarean Section with Special Reference to the Lower Segment Operations: An Analysis of 110 Consecutive Cases" (Lantern Slides), WAVERLY R. PAYNE, Newport News, Virginia.
   Discussion opened by W. Bush Anderson, Nashville, Tenn.; Tiffany J. Williams, Charlottesville, Va.

6. "A Test for Pregnancy: Technic and Comparative Results" (Lantern Slides), RICHARD PADDOCK, St. Louis, Mo.
   Discussion opened by Edwin C. Hamblen, Durham, N. C.; W. T. McConnell, Louisville, Ky.

   Election of Officers.

Thursday, November 14, 2:00 p. m.

Kentucky Hotel, Georgian Room

Joint Session with Section on Gynecology

7. "Analgesia in Labor,"
   (a) EDWARD L. CORNELL, Chicago, Ill.
   (b) WM. T. PRIDE, Memphis, Tenn.
   (c) EDWARD L. KING, New Orleans, La.

8. SYMPOSIUM ON UTERINE BLEEDING
   (a) "From the Viewpoint of the Obstetrician" (Lantern Slides), N. J. EASTMAN, Baltimore, Md.
   (b) "From the Viewpoint of the Gynecologist," RICHARD TELINDE, Baltimore, Md.
   (c) "From the Viewpoint of the Endocrinologist," EMIL NOVAK, Baltimore, Md.

   Discussion on Symposium opened by Willard S. Cooke, Galveston, Tex.; F. B. Carter, Durham, N. C.; Joseph W. Kelso, Oklahoma City, Okla.; R. A. Johnston, Houston, Texas.

9. "Chorio-epithelioma: A Series of Fifteen Cases with Difficulties in Diagnosis and Management" (Lantern Slides), EARL CONWAY SMITH and D. W. GOLDMAN, New Orleans, La.

SECTION ON UROLOGY

Armory, Room No. 3

Officers

Chairman—Rex E. Van Duzen, Dallas, Tex.
Vice-Chairman—Hubert K. Turley, Memphis, Tenn.
Secretary—Grayson Carroll, St. Louis, Mo.
Hosts from the Jefferson County Medical Society—Lytle Atherton, Owsley Grant, Chapman S. Moorman, L. Lyne Smith and James R. Stites.

Wednesday, November 13, 2:00 p. m.

Armory, Room No. 3

1. "Accidents in Renal Surgery" (Lantern Slides), NELSE F. OCKERBLAD, Kansas City, Mo.
   Discussion opened by Harold P. MacDonald, Atlanta, Ga.

2. "A Clinicopathologic Study of Cystic Lesions of the Urinary Tract," W. CALHOUN STIRLING and J. E. ASH, Washington, D. C.
   Discussion opened by Jefferson C. Pennington, Nashville, Tenn.; James J. Ravenel, Charleston, S. C.

3. "Free-for-All Hour"* conducted by T. LEON HOWARD, President, American Urological Association, Denver, Col.

SYMPOSIUM ON PROSTATIC HYPERTROPHY

4. (a) "The Early Signs, Symptoms and Diagnosis of Prostatic Obstruction," I. G. DUNCAN, Memphis, Tenn.
   (b) "The Treatment of Prostatism by Transurethral Resection" (Lantern Slides), HORATIO N. DORMAN, Washington, D. C.
   (c) "The Choice of Operation in Prostatic Obstruction" (Lantern Slides), BURNETT W. WRIGHT, Nashville, Tenn.
   Discussion on Symposium opened by Louis M. Orr, Orlando, Fla.; J. Hoy Sanford, St. Louis, Mo.; John E. Dees, Durham, N. C.

Thursday, November 14, 9:00 a. m.

Kentucky Hotel, Georgian Room

Joint Session with Section on Pediatrics—see page — for program

Thursday, November 14, 2:00 p. m.

Armory, Room No. 3

5. "Vesical Dysfunction from Lesions of the Cauda Equina" (Lantern Slides), LLOYD G. LEWIS, Baltimore, Md.
   Discussion opened by D. K. Rose, St. Louis, Mo.; Owsley Grant, Louisville, Ky.

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*Send brief abstracts of unusual or problem cases for discussion to Dr. T. Leon Howard, 1612 Tremont Place, Denver, Col.

6. Chairman's Address: "The Reaction of the Ureteral Muscle to Antispasmodic Drugs." REX E. VAN DUZEN, Dallas, Tex.

7. "Treatment of Malignant Tumors of the Adult Kidney" (Lantern Slides), VINCENT J. O'CONOR, Associate Professor of Urology, University of Illinois College of Medicine, Chicago, Ill.

8. "Sulfapyridine and Sulfathiazole Therapy in Urinary Tract Infections" (Lantern Slides), EDWIN J. ALYEA, Durham, N. C.

   Discussion opened by Ray M. Bobbitt, Huntington, West Va.; Temple Ainsworth, Jackson, Miss.

9. "Repair of Vesicovaginal Fistulas" (Motion Pictures), ERASMUS H. KLOMAN, Baltimore, Md.

   Discussion opened by George R. Livermore, Memphis, Tenn.

10. "Fibrin Stones" (Lantern Slides), CHESTER D. ALLEN, Memphis, Tenn.

    Discussion opened by Michael K. O'Heeron, Houston, Tex.; Hamilton W. McKay, Charlotte, N. C.

11. "The Therapy of Lymphogranuloma Venereum" (Lantern Slides), ROBERT BRANDT, Augusta, Ga.

    Discussion opened by J. Ullman Reaves, Mobile, Ala.

Election of Officers.

SECTION ON PROCTOLOGY

Armory, Room No. 2

Officers

Chairman—Emmett H. Terrell, Richmond, Va.
Vice-Chairman—Granville S. Hanes, Louisville, Ky.
Secretary—Frederick B. Campbell, Kansas City, Mo.
Hosts from the Jefferson County Medical Society—Bernard Asman, Granville S. Hanes, William J. Martin, Jr., and Kenneth C. Reising.

Thursday, November 14, 7:00 p. m.

Informal Section Dinner, Pendennis Club

Friday, November 15, 9:00 a. m.

Armory, Room No. 2

1. "Cancer of the Rectum, Sigmoid and Anus: Review of Forty Cases Seen During the Year 1939," HERBERT T. HAYES and HARRY B. BURR, Houston, Tex.

2. "Practical Considerations in Cancer of Sigmoid and Rectum," A. STEPHENS GRAHAM, Richmond, Va.

   Discussion on papers of Drs. Hayes and Burr and Dr. Graham opened by Curtice Rosser, Dallas, Tex.; Raymond L. Murdoch, Oklahoma City, Okla.

3. Chairman's Address: "Some Common Errors in Diagnosis and Treatment of Rectal Diseases," EMMETT H. TERRELL, Richmond, Va.

4. "The Surgical Treatment of Lymphogranulomatous Strictures of the Rectum" (Lantern Slides and Motion Pictures), HARRY E. BACON, Associate Professor of Proctology, Temple University School of Medicine and the Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa.

   Discussion opened by W. J. Martin, Jr., Louisville, Ky.; Rufus C. Alley, Lexington, Ky.

5. "Fistulectomy," JOHN L. JELKS, Memphis, Tenn.

   Discussion opened by Granville S. Hanes, Louisville, Ky.; Marion C. Pruitt, Atlanta, Ga.

6. "Local Anesthesia in Anorectal Surgery," MAURICE LESCALE, New Orleans, La.

   Discussion opened by Howard B. Williams, Birmingham, Ala.; Frederick B. Campbell, Kansas City, Mo.

Election of Officers.

SECTION ON RAILWAY SURGERY

Armory, Room No. 1

Officers

Chairman—Edgar F. Fincher, Atlanta, Ga.
Secretary—J. J. Brandabur, Huntington, West Va.
Hosts from the Jefferson County Medical Society—John T. Bate, Oscar B. Bloch, L. Ray Ellars and Clay L. Nichols.

Wednesday, November 13, 9:00 a. m.

Armory, Room No. 1

1. Chairman's Address: "Massive Frontal Injuries," EDGAR F. FINCHER, Atlanta, Ga.

2. "The Management of Long Standing Contractures of the Upper Extremities Due to Burns" (Lantern Slides), ROBT. RANDOLPH JONES, JR., Durham, N. C.

   Discussion opened by Henry G. Hollenberg, Little Rock, Ark.

3. "The Treatment of Fractures of the Shaft of the Humerus" (Lantern Slides), DUNCAN EVE, Nashville, Tenn.

   Discussion opened by H. Earle Conwell, Birmingham, Ala.

4. "Fracture of the Pelvis," OSBORNE T. BRAZELTON, Princeton, Ind.

5. "Nodular Goiter" (Motion Pictures), W. CARL KAPPES, Huntington, West Va.

   Discussion opened by R. Arnold Griswold, Louisville, Ky.

Election of Officers.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Kentucky Hotel, Gold Ballroom

Officers

Chairman—Harvey B. Searcy, Tuscaloosa, Ala.
Chairman-Elect—W. Likely Simpson, Memphis, Tenn.
Vice-Chairman—Albert L. Bass, Louisville, Ky.
Secretary—L. Chester McHenry, Oklahoma City, Okla.
Hosts from the Jefferson County Medical Society—M. C. Baker, Walter Dean, A. E. Leggett, Hugh H. Richeson and C. Dwight Townes.

Wednesday, November 13, 9:00 a. m.

Kentucky Hotel, Gold Ballroom

1. "The Interpretation and Evaluation of Tests in Strabismus" (Lantern Slides), WILLIAM THORNWALL DAVIS and ERNEST SHEPPARD, Washington, D. C.

   Discussion opened by J. Mason Baird, Atlanta, Ga.; R. E. Sullivan, Nashville, Tenn.; A. E. Leggett, Louisville, Ky.

2. Chairman's Address: "History of the Section on Ophthalmology and Otolaryngology of the Southern Medical Association with Recommendations," HARVEY B. SEARCY, Tuscaloosa, Ala.

3. "Recurrent Erosions of the Cornea," MAXWELL THOMAS, Dallas, Tex.

   Discussion opened by W. M. James, St. Louis, Mo.; J. Wesley McKinney, Memphis, Tenn.

4. "Epithelial Plaques in the Conjunctiva" (Lantern Slides), J. W. JERVEY, JR., Greenville, S. C.

   Discussion opened by R. O. Rychener, Memphis, Tenn.

5. "The Early Treatment of Squint," OSCAR WILKINSON, Washington, D. C.

   Discussion opened by Frank W. Pirkey, Louisville, Ky.; Lawrence T. Post, St. Louis, Mo.

6. "Dangers from Nonspecific Protein Therapy: Report of One Fatal Case," PHIL M. LEWIS, Memphis, Tenn.

   Discussion opened by N. D. Abell, Louisville, Ky.; Wiley R. Buffington, New Orleans, La.

7. "Easier and Safer Procedures in Cataract Extraction" (Motion Pictures), F. MAXEY COOPER, Oklahoma City, Okla.
   Discussion opened by Bennett Y. Alvis, St. Louis, Mo.; C. Dwight Townes, Louisville, Ky.

Thursday, November 14, 9:00 a. m.

Kentucky Hotel, Gold Ballroom

8. "The Correction of Defective Speech," T. EARLE JOHNSON, University, Ala.
   Discussion opened by John J. Shea, Memphis, Tenn.

9. "The Treatment of Paralytic Strabismus" (Lantern Slides), SANFORD R. GIFFORD, Professor of Ophthalmology, Northwestern University Medical School, Chicago, Ill.

10. "Ophthalmological Considerations of Neurosurgical Cases," KATE SAVAGE ZERFOSS, Nashville, Tenn.
    Discussion opened by Josiah E. Smith, Charleston, S. C.; Grady E. Clay, Atlanta, Ga.

11. "Treatment of Laryngeal Papilloma in Children" (Lantern Slides), EDWIN N. BROYLES, Baltimore, Md.
    Discussion opened by Francis E. LeJeune, New Orleans, La.; J. S. Bumgardner, Louisville, Ky.

12. "Fenestration of the Labyrinth in Chronic Conductive Deafness: An Analysis of Results Obtained" (Lantern Slides), EDWARD H. CAMPBELL, Professor of Clinical Otolaryngology, University of Pennsylvania School of Medicine and Associate Professor of Otolaryngology, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa.

13. "Tracheotomy: An Analysis of a Series of One Hundred Consecutive Cases" (Lantern Slides), GLASSELL S. FITZHUGH, Charlottesville, Va.
    Discussion opened by Wm. T. Hotchkiss, Miami Beach, Fla.; Murdock Equen, Atlanta, Ga.

Thursday, November 14, 2:00 p. m.

Kentucky Hotel, Gold Ballroom

ROUND TABLE DISCUSSION

14. "Operative Technic and Indications for Operation in Chronic Conductive Deafness," EDWARD H. CAMPBELL, Philadelphia, Pa.

15. "The Treatment of Some Corneal Diseases" (Lantern Slides), SANFORD R. GIFFORD, Chicago, Ill.

Friday, November 15, 9:00 a. m.

Kentucky Hotel, Gold Ballroom

16. "A Resume of Conservative Sinus Management and Some Recommendations Concerning Same," J. HALLOCK MOORE, Huntington, West Va.
    Discussion opened by Jos. D. Heitger, Louisville, Ky.; William A. Wagner, New Orleans, La.

17. "The Etiology of Gangrene Associated with Deep Neck Infections," CHAS. D. BLASSINGAME, Memphis, Tenn.
    Discussion opened by Wm. R. McKenzie, Baltimore, Md.; John T. Crebbin, Shreveport, La.

18. "Abuses of Nasal Medication," BERNARD J. McMAHON, St. Louis, Mo.
    Discussion opened by Watt W. Eagle, Durham, N. C.; Albert L. Bass, Louisville, Ky.

19. "Tertiary Syphilids of the Nose" (Lantern Slides), JAMES S. SNOW, Birmingham, Ala.
    Discussion opened by J. Calhoun McDougall, Atlanta, Ga.; M. M. Cullom, Nashville, Tenn.

20. "Allergic Ear Manifestations," PAUL L. MAHONEY and JOHN S. AGAR, Little Rock, Ark.
    Discussion opened by G. Bedford Brown, Lexington, Ky.; Dick P. Wall, Galveston, Tex.

21. "Laryngotracheobronchitis" (Lantern Slides), VAN DYKE HAGAMAN, Jackson, Miss.
    Discussion opened by W. Likely Simpson, Memphis, Tenn.; R. G. Reaves, Knoxville, Tenn.

Election of Officers.

SECTION ON ANESTHESIA

Kentucky Hotel, Parlor B

Officers

Chairman—R. Douglas Sanders, Louisville, Ky.
Vice-Chairman—George S. Mechling, Oklahoma City, Okla.
Secretary—Merrill C. Beck, New Orleans, La.
Hosts from the Jefferson County Medical Society—Dougal M. Dollar, Hiram S. Eggers, John W. Heim and John A. Neblett.

Thursday, November 14, 9:00 a. m.

Kentucky Hotel, Parlor B

1. "Fields for Consultation Related to Anesthesia" (Lantern Slides), R. DOUGLAS SANDERS, Louisville, Ky.
   Discussion opened by Dougal M. Dollar, Louisville, Ky.

2. "Further Observations of the Allergy of Cyclopropane," RUSSELL F. BONHAM, Houston, Tex.
   Discussion opened by C. W. Hoeflich, Houston, Tex.

3. "The Clinical Use of Intravenous Anesthesia Alone and in Combination with Other Anesthetics: A Method of Anesthesia Eliminating the Hazards of Fire and Explosion" (Lantern Slides), EDWARD B. TUOHY, Rochester, Minn.
   Discussion opened by S. A. Peoples, Tuscaloosa, Ala.

4. "The Treatment of Idiopathic Sciatica by Epidural Injection of Almond Oil and Novocain" (Motion Pictures), CHARLES B. ODOM and M. C. KOLCZUN, New Orleans, La.
   Discussion opened by Michael E. DeBakey, New Orleans, Louisiana.

5. "Outline for Teaching Anesthesia to Physicians of Small Communities," FRED E. WOODSON, Tulsa, Okla.
   Discussion opened by Lester D. Norris, Fairmont, West Va.

6. "Cyclopropane and Avertin Anesthesia at Western North Carolina Sanatorium," ARTHUR C. AMBLER, Asheville, North Carolina.
   Discussion opened by John W. Heim, Louisville, Ky.

Friday, November 15, 9:00 a. m.

Kentucky Hotel, Parlor B

7. "Some Problems of Deep Anesthesia," HOPE SNIDER ROSS, Enid, Okla.
   Discussion opened by George S. Mechling, Oklahoma City, Okla.; Joseph S. Parker, Louisville, Ky.

8. "Anesthesia for Intracranial Surgery," DONALD H. STUBBS, Washington, D. C.
   Discussion opened by Fletcher G. King, Jacksonville, Fla.

9. "The Importance and Management of Induction," WILLIAM A. HAMER, Charlotte, N. C.
   Discussion opened by Nora Dean, Louisville, Ky.

10. "Intravenous Anesthesia Combined with Regional and Spinal Anesthesia" (Lantern Slides), WM. L. SIBLEY, Roanoke, Virginia.
    Discussion opened by Merrill C. Beck, New Orleans, La.

11. "Anesthetics at Increased Pressure," CHAPMAN REYNOLDS, New Orleans, La.
    Discussion opened by P. K. Knoefel, Louisville, Ky.

Election of Officers.

SECTION ON MEDICAL EDUCATION AND HOSPITAL TRAINING

Armory, Room No. 4

Officers

Chairman—Robert U. Patterson, Oklahoma City, Okla.
Vice-Chairman—O. W. Hyman, Memphis, Tenn.
Secretary—Harvey B. Haag, Richmond, Va.
Hosts from the Jefferson County Medical Society—A. L. Bass, R. Arnold Griswold, John Walker Moore and Claude T. Wolfe.

Wednesday, November 13, 9:00 a. m.

Armory, Room No. 4

1. Chairman's Address: "Modern Standards in Medical Education," ROBERT U. PATTERSON, Dean, University of Oklahoma School of Medicine, Oklahoma City, Okla.

2. "The Teaching of Industrial Health" (Lantern Slides), FRED J. WAMPLER, Professor of Preventive Medicine, Medical College of Virginia, Richmond, Va.

3. "The Practice of Industrial Health," T. LYLE HAZLETT, Medical Director, Westinghouse Manufacturing Company, Pittsburgh, Pa.

4. "Preventive Medicine and Public Health in the Medical School Curriculum," JOHN W. SPIES, Dean, University of Texas Medical Branch, Galveston, Tex.

5. "Group Hospitalization," C. RUFUS ROREM, Director, Commission on Hospital Service, American Hospital Association, Chicago, Ill.

6. "The Internship: A Hospital and Medical School Program," RUSSELL H. OPPENHEIMER, Dean, Emory University School of Medicine, Emory University, Ga.

Election of Officers.

SECTION ON PUBLIC HEALTH

Officers

Chairman—W. B. Grayson, Little Rock, Ark.
Vice-Chairman—L. M. Graves, Memphis, Tenn.
Secretary—Henry C. Ricks, Jackson, Miss.
Hosts from the Jefferson County Medical Society—Samuel J. Brownstein, Gradie R. Rowntree and Wilson Smock.

Wednesday, November 13, 9:00 a. m.

Joint Session with General Clinical Session

Armory, Room No. 2

1. "Diagnosis and Treatment of Pellagra and Associated Nutritional Deficiencies" (Lantern Slides), TOM D. SPIES, Birmingham, Alabama, and JOHN H. KOOSER, Hyden, Kentucky.

2. "Is the Behavior of Children a Medical Responsibility?" HORTON CASPARIS, Professor of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn.

3. "The Use of Blood Plasma in Surgical Shock," CHARLES STANLEY WHITE, Professor of Surgery, George Washington University School of Medicine, Washington, D. C.

4. "An American Health Program," NATHAN B. VAN ETTEN, President, American Medical Association, New York, New York.

5. "Building Health Defenses," THOMAS PARRAN, Surgeon General, U. S. Public Health Service, Washington, D. C.

6. "The Naval Medical Officers' Public Health Activity with Special Reference to National Defense," CHAS. S. STEPHENSON, Commander, Medical Corps, U. S. Navy; In Charge of Division of Preventive Medicine, Bureau of Medicine and Surgery, Washington, D. C.

7. "Immunization Against Infectious Diseases in the United States Army," JAMES S. SIMMONS, Lieutenant-Colonel, Medical Corps, U. S. Army; Chief, Subdivision of Preventive Medicine, Office of the Surgeon General, U. S. Army, Washington, D. C.

Thursday, November 14, 9:00 a. m.

Henry Clay Hotel, Ballroom

8. Chairman's Address: "Housing Facilities for Local Health Units" (Lantern Slides), W. B. GRAYSON, Commissioner of Health of Arkansas, Little Rock, Ark.

9. "The Syphilis Control Program in Mississippi" (Lantern Slides), PAUL T. ERICKSON, P. A. Surgeon, U. S. Public Health Service, and D. V. GALLOWAY, State Board of Health, Jackson, Miss.

   Discussion opened by John R. Heller, Jr., P. A. Surgeon, U. S. Public Health Service, New Orleans, La.; C. B. Tucker, Director, Division of Preventable Diseases, Tennessee Department of Public Health, Nashville, Tenn.

10. "The Education of Public Health Personnel," HARRY S. MUSTARD, Director, De Lamar Institute of Public Health and Professor of Public Health Practice, College of Physicians and Surgeons, Columbia University, New York, N. Y.

    Discussion opened by Thomas Parran, Surgeon General, U. S. Public Health Service, Washington, D. C.; Felix J. Underwood, Executive Officer, Mississippi State Board of Health, Jackson, Miss.

11. "The Value of Collapse Therapy in the Tuberculosis Program of Mississippi" (Lantern Slides), JOHN S. HARTER, Thoracic Surgeon, Mississippi State Sanatorium, Sanatorium, Mississippi.

    Discussion opened by Lawrence W. Nehil, Louisville, Ky.; Paul A. Turner, Superintendent of State Tuberculosis Sanatorium, Louisville, Ky.

12. "Ten Years in Maternity and Infancy Work in North Carolina," GEO. M. COOPER, Assistant State Health Officer, Raleigh, N. C.

    Discussion opened by Robt. W. Ball, Director, Division of Maternal and Child Health, State Board of Health, Columbia, S. C.; Chas. B. Crittenden, Director of Maternal and Child Health, State Board of Health, Louisville, Ky.

13. "The Incidence of Intestinal Parasites in School Children of Eastern Oklahoma" (Lantern Slides), JAMES K. GRAY, Consultant Pediatrician, Five-County Cooperative District, Tahlequah, Okla., and D. B. McMULLEN, Acting Head, Department of Hygiene and Public Health, University of Oklahoma School of Medicine, Oklahoma City, Okla.

    Discussion opened by J. A. Morrow, Deputy Commissioner of Health, Oklahoma City, Okla.; Henry E. Meleney, Assistant Professor of Preventive Medicine and Public Health, Vanderbilt University School of Medicine, Nashville, Tenn.

Election of Officers.

AMERICAN PUBLIC HEALTH ASSOCIATION

Southern Branch

Officers

President—G. Foard McGinnes, Memphis, Tenn.
First Vice-President—Carl V. Reynolds, Raleigh, N. C.
Second Vice-President—(Mr.) James H. Stephens, Columbia, S. C.
Third Vice-President—(Miss) Ruth A. Heintzelman, Washington, D. C.
Secretary-Treasurer—P. E. Blackerby, Louisville, Ky.
Hosts from the Jefferson County Medical Society—F. W. Caudill, Hugh R. Leavell and John D. Trawick.

Tuesday, November 12, 10:00 a. m.

Henry Clay Hotel, Ballroom

PUBLIC HEALTH NURSING SECTION

(Miss) Emma Maurin, R.N., Chairman, presiding

The Use of a Field Experience Center in the Development of Public Health Nursing

(a) "Its Use as an Orientation Center," (Miss) LAURENCE BERNARD, R.N., Chief of Nursing Staff, Louisiana's Experience Center, Franklin, La.

Discussion opened by (Miss) Nancy Cummings, R.N., Supervisor of Nurses, Fayette County Health Department, Lexington, Ky.

(b) "Its Use for Public Health Nursing Students," (Miss) JANE GAVIN, R.N., Supervising Nurse, District Health Department, Chapel Hill, N. C.

Discussion opened by (Miss) Frances C. Montgomery, R.N., Director of Public Health Nursing Education, William and Mary College, Richmond, Va.

(c) "Its Use at Refresher Experience Center," (Mrs.) HETTIE MOORE MAXWELL, R.N., Director Nursing Service Experience Center, Morrilton, Ark.

Discussion opened by (Miss) Margaret Wohlegemuth. R.N., Supervisor Public Health Nursing, Anne Arundel County, Annapolis, Md.

Monday, November 11

SANITARY ENGINEERS' AND SANITATION OFFICERS' SECTION

Registration, 1:30 p. m., Kentucky State Board of Health. followed by Field Trip to Pasteurization Plants and Dairy Farms.

Dinner, 7:30 p. m. (place to be announced) followed by Business Meeting and Colored Motion Picture, "Behind the Water Tap."

Tuesday, November 12, 10:00 a. m.

Henry Clay Hotel, Room B

SANITARY ENGINEERS' AND SANITATION OFFICERS' SECTION

(Mr.) H. C. Tuggle, Chairman, presiding

1. "Public Health Mapping," (Mr.) L. M. CLARKSON, Director of Public Health Engineering, State Department of Public Health, Atlanta, Ga.

   Discussion opened by (Mr.) C. L. White, Jr., Assistant State Director of Malaria Control, North Carolina State Board of Health, Raleigh, N. C.; (Mr.) W. H. Grisham, Director of Housing and Malaria Control, Memphis Health Department, Memphis, Tenn.

2. "Flood Protection of Water Works," (Mr.) B. E. PAYNE, Assistant Engineer, Louisville Water Company, Louisville, Kentucky.

   Discussion opened by (Mr.) L. M. Fisher, Senior Sanitary Engineer, U. S. Public Health Service, Washington, D. C.

3. "Some Problems in Milk Control," (Mr.) J. FRANK FIELD, Engineer on Milk Sanitation, Division of Sanitary Engineering, Tennessee Department of Public Health, Nashville, Tennessee.

   Discussion opened by (Mrs.) Sarah V. Dugan, Director of Bureau of Foods, Drugs and Hotels, Kentucky State Department of Health, Louisville, Ky.

Tuesday, November 12, 12:30 noon

Meeting of Governing Council—Luncheon, Brown Hotel, Room 439

G. Foard McGinnes, President, presiding

Tuesday, November 12, 2:00 p. m.

Henry Clay Hotel, Ballroom

GENERAL SESSION

G. Foard McGinnes, President, presiding

1. President's Remarks, G. FOARD McGINNES, Director, Memphis-Shelby County Venereal Disease Control Project, Memphis, Tenn.

2. "The Ohio River Pollution Survey in Relation to Pollution Problems in the Southern States and Lower Ohio River Basin," (Mr.) E. S. TISDALE, Sanitary Engineer, Ohio River Pollution Survey, Cincinnati, Ohio.

   Discussion opened by (Mr.) J. B. Harrington, Director, Division of Sanitary Engineering, and (Mr.) Kenneth S. Watson, Chemical Engineer, State Water Commission, State Department of Health, Charleston, West Va.; (Mr.) F. C. Dugan, State Sanitary Engineer, State Department of Health, Louisville, Ky.

3. "Health and Safety Services of the Tennessee Valley Authority," E. L. BISHOP, Director of Health, Tennessee Valley Authority, Chattanooga, Tenn.

   Discussion opened by J. N. Baker, State Health Officer, Montgomery, Ala.; A. T. McCormack, State Health Commissioner, Louisville, Ky.

4. "Trachoma Problems in Arkansas," K. W. COSGROVE, Consulting Ophthalmologist, Arkansas State Board of Health, Little Rock, Ark.

   Discussion opened by Chas. E. Rice, Surgeon, U. S. Public Health Service, Consultant to Social Security Board, Washington, D. C.

5. "The Merit System in Relationship to Public Health Personnel," FRANK L. ROBERTS, Professor of Preventive Medicine, University of Tennessee, Memphis. Tenn., and BYRON HILL (Ph.D.), Supervisor of Examinations, Tennessee Civil Service, Nashville, Tenn.

   Discussion opened by W. C. Williams, State Commissioner of Health, Nashville, Tenn.; Felix J. Underwood, Executive Officer, State Board of Health, Jackson, Miss.

Wednesday, November 13, 2:00 p. m.

Henry Clay Hotel, Ballroom

GENERAL SESSION

G. Foard McGinnes, President, presiding

6. "Sulfonamide Therapy in Male Gonorrhea: A Comparative Study," ROGERS DEAKIN, St. Louis, Mo.

   Discussion opened by G. Foard McGinnes, Director, Memphis-Shelby County Venereal Disease Control Project, Memphis, Tenn.; F. W. Caudill, Director, Bureau of Epidemiology, State Department of Health, Louisville, Ky.

7. "The Importance of Public Health Nursing Supervision in Public Health Service," (Miss) PEARL McIVER, Senior Public Health Nursing Consultant. U. S. Public Health Service, Washington, D. C., and (Miss) MARY J. DUNN, Public Health Nursing Consultant, U. S. Public Health Service, Washington, D. C.

   Discussion opened by (Mrs.) Laurene Fisher, Director of Public Health Nursing, State Department of Health, Charleston, West Va.; (Miss) Margaret L. East, Director of Public Health Nursing, State Department of Health, Louisville, Ky.

8. "Relationship of Public Health Activities to the Real Need," W. D. BURKHALTER, Associate in County Organization, Department of Public Health, Montgomery, Ala.

   Discussion opened by I. C. Riggin, State Health Commissioner, Richmond, Va.; Carl V. Reynolds, State Health Officer, Raleigh, N. C.

9. "Medical and Hospital Care Provided Under Maternal and Child Health Programs," EDWIN F. DAILY, Director, Maternal and Child Health Division, Children's Bureau, Washington, D. C.

   Discussion opened by R. W. Ball, Director, Maternal and Child Health, State Board of Health, Columbia, S. C.; J. H. Knox, Jr., Chief, Child Hygiene, Maryland Department of Health, Baltimore, Md.

10. "The Relative Value of Award Programs in Public Health," CARL M. GAMBILL, Assistant Director of County Health Work, State Department of Health, Louisville, Ky.

    Discussion opened by Robert H. Hutcheson, Assistant Commissioner, Tennessee Department of Public Health, Nashville, Tenn.; G. G. Lunsford, Director, Local Health Organization, Georgia Department of Public Health, Atlanta, Georgia.

Business Session.

NATIONAL MALARIA COMMITTEE

Seelbach Hotel

Officers

Honorary Chairman—L. O. Howard, Washington, D. C.
Chairman—(Mr.) W. G. Stromquist, Chattanooga, Tenn.
Chairman-Elect—J. N. Baker, Montgomery, Ala.
Vice-Chairman—(Mr.) J. H. O'Neill, New Orleans, La.
Secretary-Treasurer—Mark F. Boyd, Tallahassee, Fla.
Hosts from the Jefferson County Medical Society—A. R. Bizot, James F. Crane and Frank M. Stites, Jr.

Wednesday, November 13, 9:00 a. m.

Seelbach Hotel, Parlor B

Business Session, (Mr.) W. G. Stromquist, Chairman, presiding

Consideration of regular and special business, reports of standing sub-committees, etc.

Thursday, November 14, 2:00 p. m.

Seelbach Hotel, Rathskeller

Joint Session with the American Society of Tropical Medicine, (Mr.) W. G. Stromquist, Chairman, National Malaria Committee, and L. L. Williams, Jr., President, American Society of Tropical Medicine, presiding.

1. "The Chemotherapeutic Activity of Synthetic Antimalarials," JOHN MAIER, International Health Division, Rockefeller Foundation, New York, N. Y.

2. "Studies on Induced Quartan Malaria in Negro Paretics: III, Clinical Observations," MARTIN D. YOUNG, SOL B. McLENDON and G. ROBERT COATNEY, U. S. Public Health Service, South Carolina State Hospital, Columbia, South Carolina.

3. "A Comparison of the Effects of Quinine and Atabrine in the Treatment of Malaria," EVERETT P. VEATCH, Pasadena, Tex.

4. "Intermittent Irrigation in Rice Cultivation and Its Effect on Yield, Water Consumption and *Anopheles* Production," ROLLA B. HILL and FRANCISCO J. C. CAMBOURNAC, International Health Division, Rockefeller Foundation, New York, N. Y.

5. "The Eggs of Some Costa Rican Anophelines," HENRY W. KUMM, International Health Division, Rockefeller Foundation, San Jose, Costa Rica, C. A.

6. "Observations on the Macroscopic Species: Identification of Larval Anopheles in Georgia" (Lantern Slides), (Mr.) R. EDWARD BELLAMY, Georgia State Department of Public Health, Atlanta, Ga.

Discussion opened by (Mr.) W. V. King, Orlando, Fla.; Mark F. Boyd, Tallahassee, Fla.

Friday, November 15, 9:00 a. m.

Seelbach Hotel, Rathskeller

7. Chairman's Address: "A Partnership in Malaria Control," (Mr.) W. G. STROMQUIST, Health and Safety Department, Tennessee Valley Authority, Chattanooga, Tenn.

8. "Practical Methods in Permanent Drainage for Malaria Control," (Mr.) W. V. PARKER, Office of Malaria Investigations, U. S. Public Health Service, Memphis, Tenn.

9. "Present Day Methods for Controlling *Aedes aegypti* Mosquitoes" (Lantern Slides), (Mr.) JAMES H. LE VAN, U. S. Public Health Service, National Institute of Health, Bethesda, Md.

Discussion opened by (Mr.) H. A. Johnson, U. S. Public Health Service, Bethesda, Md.

10. "An Evaluation of Mosquito-Proofing for Malaria Control Based on Three Years' Observations," R. B. WATSON and O. M. DERRYBERRY, Tennessee Valley Authority, Wilson Dam, Ala.

11. "Further Consideration of Construction and Maintenance Costs of Mosquito-Proofing for Malaria Control," (Mr.) C. C. KIKER, Tennessee Valley Authority, Wilson Dam, Ala., and (Mr.) H. E. BREEDLOVE, Alabama State Department of Public Health, Athens, Ala.

12. "Studies on the Concentration and Distribution of Paris-Green-Lime Mixtures Applied as Anopheline Larvicides" (Lantern Slides), (Mr.) R. S. HOWARD, JR., and (Mr.) JUSTIN ANDREWS, Georgia State Department of Public Health, Atlanta, Ga.

Discussion opened by L. L. Williams, Jr., Bethesda, Md.; (Mr.) John M. Henderson, Atlanta, Ga.

13. "Experimental Wells in the Study and Evaluation of a Drainage Problem," (Mr.) DAVID LEE, Malaria Division, Escambia County Health Department, Pensacola, Fla.

14. "Immunization of Bird Malaria," (Mr.) WENDELL GINGRICH, Associate Professor, University of Texas Medical Department, Galveston, Tex.

AMERICAN SOCIETY OF TROPICAL MEDICINE

Seelbach Hotel

Officers

President—L. L. Williams, Jr., Bethesda, Md.
President-Elect—Thomas T. Mackie, New York, N. Y.
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Secretary-Treasurer—E. Harold Hinman, Wilson Dam, Ala.
Editor—Charles F. Craig, San Antonio, Tex.

Councilors—R. A. Lambert, New York, N. Y.; N. Paul Hudson, Columbus, Ohio; Mark F. Boyd, Tallahassee, Fla.; Alfred C. Reed, San Francisco, Calif.; J. S. Simmons, Boston, Mass.; Henry E. Meleney, Nashville, Tenn.; L. T. Coggeshall, New York, N. Y.; and Jean A. Curran, Brooklyn, N. Y.

Hosts from the Jefferson County Medical Society—R. B. Holt and Robert D. Mansfield.

Tuesday, November 12, 2:00 p. m.

Seelbach Hotel, Rathskeller

1. "Vitamin C Level of the Plasma in a North Carolina Community" (Lantern Slides) (15 min.), D. F. MILAM, Rockefeller Foundation, Chapel Hill, N. C.

2. "Nerve Degeneration in Rats Produced by Diets Deficient in Vitamin B2 Complex, and by Diets Deficient in Vitamin A, and the Bearing of These Results on the Etiology of Beriberi" (Lantern Slides) (15 min.), EDWARD B. VEDDER, George Washington University School of Medicine, Washington, D. C.

3. "Thiamin Protection Against the Depressive Effect of Tropical Heat" (Lantern Slides) (10 min.), C. A. MILLS and J. W. COLVIN, University of Cincinnati College of Medicine, Cincinnati, Ohio.

4. The Fifth Charles Franklin Craig Lecture on Tropical Medicine: "The Control of Typhus Fever," ROLLA B. DYER, National Institute of Health, Washington, D. C.

5. Award of the Walter Reed Medal to HERBERT C. CLARK, Gorgas Memorial Laboratory, Ancon, Canal Zone.

6. "Yaws and Syphilis: The Same or Different? Should the Discussion be Continued?" E. HERNDON HUDSON, Ohio University, Athens, Ohio.

Tuesday, November 12, 6:00 p. m.

Seelbach Hotel, Leather Room

Annual dinner and business meeting of the Officers and Council of the Society.

Wednesday, November 13, 9:00 a. m.

Seelbach Hotel, Rathskeller

7. "The Excystation of *Endamoeba histolytica* in Bacteriologically Sterile Media" (Lantern Slides and Motion Pictures) (15 min.), HENRY E. MELENEY and THOMAS L. SNYDER, Vanderbilt University School of Medicine, Nashville, Tenn.

8. "Amebiasis in the New Orleans Population as Revealed by Autopsy Examinations of Accident Cases" (Lantern Slides) (15 min.), ERNEST CARROLL FAUST, Tulane University School of Medicine, New Orleans, La.

9. "Problems Encountered in the Growth of *Endamoeba histolytica* in Cultures Developed by Micro-Isolation" (Lantern Slides) (15 min.), CHARLES W. REES, National Institute of Health, Washington, D. C.

10. "Naturally Acquired Infections of *Endamoeba histolytica* in *Rhesus* and *Ateles* Monkeys," CARL M. JOHNSON, Gorgas Memorial Laboratory, Ancon, Canal Zone.

11. "Bovine Trypanosomiasis in Panama" (12 min.), CARL M. JOHNSON, Gorgas Memorial Laboratory, Ancon, Canal Zone.

12. "Bismuth vs. Antimonial Compounds in Experimental Leishmaniasis" (Read by title), H. Y. SOONG and HAMILTON H. ANDERSON, Peiping Union Medical College, Peiping, China.

13. "Macroscopic Agglutination of Typhus Rickettsiae by Sera of Man and Experimental Animals" (Lantern Slides) (15 min.), N. PAUL HUDSON, Ohio State University, Columbus, Ohio.

14. "Rocky Mountain Spotted Fever" (Motion Pictures), R. R. PARKER, Rocky Mountain Laboratory, Hamilton, Mont.

15. "Observations on Relapsing Fever Spirochetes Cultivated in Developing Hen Egg" (Read by title), S. W. BOHLS and J. V. IRONS, Texas State Health Department, Austin, Texas.

16. "Recent Advances in the Study of Coccidioides Infection" (Lantern Slides) (15 min.), J. F. KESSEL, University of Southern California School of Medicine, Los Angeles, California.

17. "Treatment of Systemic Blastomycosis" (Lantern Slides) (15 min.), DONALD S. MARTIN, Duke University School of Medicine, Durham, N. C.

Wednesday, November 13, 2:00 p. m.

Seelbach Hotel, Rathskeller

Brief Business Session.

18. "Intestinal Parasitism Among Students of Berea College, Kentucky" (Lantern Slides) (15 min.), WILLIAM HUGH HEADLEE and RAYMOND M. CABLE, Purdue University, Lafayette, Ind.

19. "The Specific Gravity of Various Nematode Eggs" (Read by title), WILLI SAWITZ, Tulane University School of Medicine, New Orleans, La.

20. "Factors Influencing the Development of Immunity to Trichiniasis in Rats" (Lantern Slides) (15 min.), O. R. McCOY, University of Rochester School of Medicine, Rochester, N. Y.

21. "Resistance to Trichinosis Reinfection in Man" (12 min.), Z. BERCOVITZ and A. E. THOMSON, City Department of Health, New York, N. Y.

22. "Trichinosis in New York City" (Lantern Slides) (10 min.), HARRY MOST and MILTON HELPERN, New York University College of Medicine, New York, N. Y.

23. "Skin Tests in Echinococcus Disease with Especial Reference to the Use of Antigens from Heterologous Cestodes" (Lantern Slides) (15 min.), JAMES T. CULBERTSON, College of Physicians and Surgeons, Columbia University, New York, N. Y.

24. "Studies in Insect Bite Desensitization" (12 min.), BARBARA C. McIVAR and L. S. CHERNEY, University of California Medical School, San Francisco, Calif.

25. "The Distribution and Control of Schistosome Dermatitis in Wisconsin and Michigan" (Lantern Slides) (12 min.), DONALD B. McMULLEN, University of Oklahoma School of Medicine, Oklahoma City, Okla.

26. "A County-Wide Study of Hookworm Infestation in Georgia" (Lantern Slides) (15 min.), JUSTIN ANDREWS, Georgia Department of Public Health, Atlanta, Ga.

27. "Two Cases of Coma Following Tetrachlorethylene" (Read by title), J. H. SANDGROUND, Eli Lilly Research Laboratories, Indianapolis, Ind.

28. "Reactions Following Administration of Atabrine" (15 min.), W. N. BISPHAM, University of Maryland School of Medicine, Baltimore, Md.

29. "The Effect of Ultraviolet Radiation on Plasmodium of Birds" (Lantern Slides) (12 min.), W. B. REDMOND, Emory University School of Medicine, Atlanta, Ga.

30. "Studies on the Protein Tyrosin Reaction as a Diagnostic Test for Malaria" (Read by title), J. C. SWARTZWELDER and C. C. ADAMS, Louisiana State University School of Medicine, New Orleans, La.

31. "Exoerythrocytoc Schizogony in *Plasmodium circumflexum* Infections Derived from a Single Parasite" (Read by title), REGINALD D. MANWELL and FREDERICK GOLDSTEIN, Syracuse University College of Medicine, Syracuse, N. Y.

Wednesday, November 13, 8:00 p. m.

General Session, President's Night, of the Southern Medical Association, Brown Hotel, Crystal Ballroom

Thursday, November 14, 12:00 noon

Seelbach Hotel, Robert E. Lee Room

Annual Luncheon of the Society

32. President's Address: "Malaria Along the Burma Road," L. L. WILLIAMS, JR., U. S. Public Health Service, Bethesda, Maryland.

Thursday, November 14, 2:00 p. m.

Joint Session with the National Malaria Committee. See National Malaria Committee, page —, for program.

AMERICAN ACADEMY OF TROPICAL MEDICINE

Meeting conjointly with American Society of Tropical Medicine

Officers

President—Charles S. Butler, Bristol, Tenn.
Vice-President—Marshall A. Barber, Boston, Mass.
Secretary—Ernest Carroll Faust, New Orleans, La.
Treasurer—Thomas T. Mackie, New York, N. Y.

Thursday, November 14, 7:00 p. m.

Seelbach Hotel, Robert E. Lee Room

Seventh Annual Dinner of the American Academy of Tropical Medicine, to which members of the Academy and of the American Society of Tropical Medicine, and friends of both, are cordially invited. Following the dinner there will be the Presidential Address of Dr. CHARLES S. BUTLER, Rear Admiral, Medical Corps, U. S. Navy, Retired, Bristol, Tennessee, entitled "Some Contributions of United States Naval Medical Officers to Science."

SOUTHERN STUDENT HEALTH ASSOCIATION

Kentucky Hotel

Officers

President—Charles N. Wyatt, Furman University, Greenville, South Carolina.
Vice-President—W. R. Berryhill, University of North Carolina, Chapel Hill, N. C.
Secretary-Treasurer—Lee W. Milford, Clemson Agricultural College, Clemson, S. C.

and

MISSISSIPPI VALLEY STUDENT HEALTH ASSOCIATION

Kentucky Hotel

Officers

President—R. M. Powell, University of Tennessee, Knoxville, Tennessee.
Vice-President—C. B. Mitchell, Mississippi State College, State College, Miss.
Secretary—Ruby Helen Paine, Berea College, Berea, Ky.

Hosts from the Jefferson County Medical Society—Meyer M. Harrison, Carlisle Morse, Stanley T. Simmons and Morris H. Thompson.

Monday, November 11, 9:30 a. m.

Kentucky Hotel, Ship Room

9:30 a. m. Registration.

10:00 a. m. "The Health Education Program of a Teachers' Training College," (Miss) MARGARET DIZNEY, R.N., Department of Nursing Education, Peabody College, Nashville, Tenn.

Discussion opened by J. D. Farris, Student Health Service, Eastern College, Richmond, Ky.; J. W. Armstrong, Student Health Service, Berea College, Berea, Ky.

11:00 a. m. "Is There an Intestinal Parasite Problem Among College Students?" ERNEST CARROLL FAUST, Director, School of Tropical Medicine, Tulane University School of Medicine, New Orleans, La.

Discussion opened by Wm. H. Headlee, Department of Parasitology, Purdue University, Lafayette, Ind.; Justin Andrews, Department of Malaria and Hookworm Control, State Department of Health, Atlanta, Ga.

Monday, November 11, 12:30 noon

Luncheon, Kentucky Hotel, Georgian Room

12:30 noon. "The Practice of Medicine: A Glorious Adventure," ARTHUR T. McCORMACK, President, Southern Medical Association, Louisville, Ky.

Monday, November 11, 2:00 p. m.

Kentucky Hotel, Ship Room

2:00 p. m. Business Meeting.

2:30 p. m. "Immunity and Chemotherapy in a College Health Program," F. KIRBY HARDER, Department of Preventive Medicine, City of Cincinnati, Cincinnati, Ohio.

Discussion opened by F. W. Caudill, State Department of Health, Louisville, Ky.; Gradie R. Rowntree, Health Department, Louisville, Ky.

3:30 p. m. "The Pronated Foot as Related to Body Mechanics and Health," NICHOLAS JAMES GIANNESTRAS, Cincinnati, Ohio.

Discussion opened by O. H. Gunkler, Director, Physical Education Department, Berea College, Berea, Ky.; Herbert B. Schwartz, Physical Education Director, Arkansas State College, Jonesboro, Ark.

4:50-5:00 p. m. Discussion Period, THOS. B. ZERFOSS, Vanderbilt University, Nashville, Tenn., presiding. Dr. Zerfoss will lead off the discussion with "Vanderbilt Plans for the Future."

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

SEVENTEENTH ANNUAL MEETING

Brown Hotel

Officers

President—Mrs. Charles P. Corn, Greenville, S. C.
President-Elect—Mrs. M. Pinson Neal, Columbia, Mo.
First Vice-President—Mrs. L. S. Thompson, Dallas, Tex.
Second Vice-President—Mrs. Eustace A. Allen, Atlanta, Ga.
Recording Secretary—Mrs. H. V. Thomas, Clarksburg, West Va.
Corresponding Secretary—Mrs. J. W. Bell, Walhalla, S. C.
Treasurer—Mrs. K. W. Cosgrove, Little Rock, Ark.
Historian—Mrs. W. T. Braun, Memphis, Tenn.
Parliamentarian—Mrs. W. H. Anderson, Booneville, Miss.
Standing Committees—
Custodian of Records—Mrs. Stephen C. McCoy, Louisville, Ky.
Research—Mrs. Hugh Leslie Moore, Dallas, Tex.
Memorial—Mrs. J. Ullman Reaves, Mobile, Ala.
Resolutions—Mrs. Joseph A. Elliott, Charlotte, N. C.
Jane Todd Crawford—Mrs. Luther Bach, Bellevue, Ky.
Budget—Mrs. William Hibbitts, Texarkana, Tex.

Tuesday, November 12

Registration, Brown Hotel, beginning at 9:00 a. m.

Wednesday, November 13, 8:00 a. m.

Executive Board Meeting (breakfast meeting), Brown Hotel, Louis XVI Room, Mrs. Charles P. Corn, President, presiding

Wednesday, November 13, 10:00 a. m.

Brown Hotel, Roof Garden

Mrs. Charles P. Corn, President, presiding

All women attending the Southern Medical Association meeting are cordially invited to attend.

Call to order by the President.

Invocation, Rev. Chas. W. Welch, D.D., Pastor, Fourth Street Presbyterian Church, Louisville.

Address of Welcome, Mrs. Richard T. Hudson, President, Woman's Auxiliary to the Jefferson County Medical Society, and a General Chairman for the Louisville meeting, Louisville.

Response to the Address of Welcome, Mrs. Olin S. Cofer, Atlanta, Ga.

Greetings from Woman's Auxiliary to the Jefferson County Medical Society, Mrs. Philip E. Blackerby, a General Chairman for the Louisville meeting, Louisville.

Greetings from the Woman's Auxiliary to the Kentucky State Medical Association, Mrs. John M. Blades, President, Butler.

Greetings from Advisory Committee of the Southern Medical Association: Dr. Arthur T. McCormack, President, Louisville; Dr. Vincent W. Archer, Chairman of Council, University, Va.; and Mr. C. P. Loranz, Secretary-Manager, Birmingham, Ala.

Address: "Enlarging the Circulation of the National Auxiliary Bulletin," Mrs. V. E. Holcombe, President, Woman's Auxiliary to the American Medical Association, Charleston, West Virginia.

Presentation of Mrs. Roscoe E. Mosiman, President-Elect of the Woman's Auxiliary to the American Medical Association, Seattle, Wash.

Presentation of Mrs. M. Pinson Neal, President-Elect of the Woman's Auxiliary to the Southern Medical Association, Columbia, Mo.

Recognition of Officers and Chairmen of Standing Committees of the Woman's Auxiliary to the Southern Medical Association.

Recognition of Councilors and State Presidents.

Recognition of Past Presidents of the Woman's Auxiliary to the Southern Medical Association.

Count of States.

In Memoriam Service, Mrs. J. Ullman Reaves, Chairman, Mobile, Ala., assisted by Mrs. Hildred Morrow, Soprano, and Mrs. Sidney Meyers, Accompanist, Louisville. Special tribute to the late Mrs. Seale Harris, Birmingham, Alabama, Founder of the Woman's Auxiliary to the Southern Medical Association.

Adjournment.

Wednesday, November 13, 12:30 noon

Brown Hotel, Crystal Ballroom

Annual Luncheon of the Auxiliary. All women attending the Southern Medical Association meeting are cordially invited to attend. Luncheon tickets, $1.00.

Mrs. Charles P. Corn, President, presiding

Call to order by the President.

Recognition of General Chairman for the Louisville meeting and the Luncheon Chairman.

Recognition of Mrs. M. Pinson Neal, President-Elect of the Woman's Auxiliary to the Southern Medical Association, Columbia, Mo.

Recognition of Officers and Chairmen of Standing Committees of the Woman's Auxiliary to the Southern Medical Association.

Recognition of Councilors and State Presidents.

Recognition of Past Presidents of the Woman's Auxiliary to the Southern Medical Association.

Introduction of Luncheon Toastmistress, Mrs. William Hibbitts, Texarkana, Tex.

Presentation of Distinguished Guests.

"Pageantry of Pioneer Kentucky." Mrs. Joseph Weir, Chairman, Louisville.

Adjournment.

Thursday, November 14, 9:30 a. m.

Brown Hotel, South Room

Mrs. Charles P. Corn, President, presiding

All women attending the Southern Medical Association meeting are cordially invited to attend.

Call to order by the President.

Minutes, Mrs. H. V. Thomas, Recording Secretary, Clarksburg, West Va.

Report of Credentials and Registration, Miss Grace Stroud, Chairman, Louisville.

Report of Officers and Standing Committees.

Report from State Councilors.

Old Business.

New Business.

Courtesy Resolutions, Mrs. Joseph A. Elliott, Charlotte, N. C.

Report of Nominating Committee.

Election of Officers.

Installation of Officers by Mrs. Arthur T. McCormack, Louisville.

Presentation of Gavel to the incoming President, Mrs. M. Pinson Neal, by Mrs. Charles P. Corn, retiring President.

Announcements.

Adjournment.

COUNCIL, Woman's Auxiliary to the Southern Medical Association

(All are Members of the Executive Board)

Expire 1940—
Alabama—Mrs. L. W. Roe, Mobile.
Arkansas—Mrs. W. T. Wootten, Hot Springs.
District of Columbia—Mrs. A. Barnes Hooe, Washington.
Florida—Mrs. E. W. Veal, South Jacksonville.
Georgia—Mrs. L. W. Williams, Savannah.

Expire 1941—
Kentucky—Mrs. John M. Blades, Butler.
Louisiana—Mrs. Wiley R. Buffington, New Orleans.
Maryland—
Mississippi—Mrs. R. H. Clark, Hattiesburg.
Missouri—Mrs. August A. Werner, St. Louis.
North Carolina—Mrs. J. Buren Sidbury, Wilmington.

Expire 1942—
Oklahoma—Mrs. G. H. Garrison, Oklahoma City.
South Carolina—Mrs. C. C. Ariail, Greenville.
Tennessee—Mrs. H. E. Christenberry, Knoxville.
Texas—Mrs. Frank N. Haggard, San Antonio.
Virginia—Mrs. Hawes Campbell, Venter.
West Virginia—Mrs. R. H. Walker, Charleston.

PAST PRESIDENTS, Woman's Auxiliary to the Southern Medical Association

(All are Members of the Executive Board)

1925—Mrs. E. H. Cary, Dallas, Tex.
1926—Mrs. D. J. Williams, Gulfport, Miss.
1927—Mrs. Oscar M. Marchman, Dallas, Tex.
1928—Mrs. Arthur T. McCormack, Louisville, Ky.
1929—Mrs. C. W. Garrison, Little Rock, Ark.
1930—Mrs. James N. Brawner, Atlanta, Ga.
1931—Mrs. S. A. Collom, Sr., Texarkana, Tex.
1932—Mrs. Charles E. Oates, North Little Rock, Ark.
1933—Mrs. Arthur A. Herold, Shreveport, La.
1934—Mrs. Southgate Leigh, Norfolk, Va.
1935—Mrs. J. Bonar White, Atlanta, Ga.
1936—Mrs. Oliver W. Hill, Knoxville, Tenn.
1937—Mrs. Frank N. Haggard, San Antonio, Tex.
1938—Mrs. Luther Bach, Bellevue, Ky.
1939—Mrs. W. K. West, Oklahoma City, Okla.

COMMITTEE ON WOMEN'S ENTERTAINMENT, LOUISVILLE

General Chairmen—Mrs. Richard T. Hudson and Mrs. Philip E. Blackerby.

Vice-General Chairmen—Mrs. J. B. Lukins, Mrs. E. Lee Heflin, Mrs. C. W. Dowden, Mrs. E. L. Henderson, Mrs. W. Barnett Owen, Mrs. Frank M. Stites, Mrs. J. Duffy Hancock, Mrs. M. J. Henry, Mrs. Walter Dean and Mrs. Arthur T. McCormack.

Pages—Mrs. Pat R. Imes, Chairman; Mrs. Chas. M. Bernhard, Mrs. Louis O. Mitzlaff, Mrs. Wm. McD. Ewing, and Mrs. Arthur L. Juers.

Golf—Mrs. W. Stewart Carter, Chairman.

Hostesses—Mrs. J. Paul Keith, Chairman; Mrs. Wm. E. Fallis, Mrs. M. J. Henry, Mrs. Hugh A. Leavell, Mrs. Winston U. Rutledge, Mrs. Frank P. Strickler, Mrs. Albert L. Bass, Mrs. Frank M. Stites, Mrs. Auryne E. Bell, Mrs. Lamar W. Neblett, Mrs. C. W. Dowden, Mrs. E. Lee Heflin, Mrs. C. Dwight Townes, Mrs. Shelton Watkins, Mrs. Woodford B. Troutman, Mrs. D. Y. Keith, Mrs. W. W. Nicholson, Mrs. Morris Flexner, Mrs. L. Wallace Frank, Mrs. W. E. Gardner, Mrs. George A. Hendon, Mrs. Malcom Thompson, Mrs. J. D. Gibbs, Mrs. Leo Bloch, Mrs. R. Arnold Griswold, and Mrs. R. Glen Spurling.

Registration—Miss Grace Stroud, Chairman; Mrs. J. Parks Ogden, Mrs. Albert E. Leggett, Mrs. Prescott Sandidge, Mrs. Sam A. Overstreet, and Mrs. James S. Lutz.

Transportation—Mrs. A. Clayton McCarty, Chairman; Mrs. Stephen C. McCoy, Mrs. C. H. Krieger, Mrs. J. L. Hackett, Mrs. Arthur T. Hurst, Mrs. Wm. J. Martin, Jr., Mrs. James R. Hendon, and Mrs. Austin Bloch.

Publicity—Miss Grace Stroud, Chairman.

Entertainment—Mrs. W. Barnett Owen, Chairman; Mrs. David E. Jones, Mrs. Oscar Bloch, Mrs. Claude T. Wolfe, Mrs. Octavus Dulaney, Mrs. J. Murray Kinsman, Mrs. J. Duffy Hancock, Mrs. E. L. Henderson, Mrs. Wilson Smock, Mrs. Spalding Abell, and Miss Nancye Aud.

Luncheons—Mrs. Harry W. Venable, Chairman (Wednesday), Mrs. Oliver H. Kelsall, Chairman (Thursday); Mrs. David M. Cox, Mrs. Leo Bloch, Mrs. Walter I. Hume, Mrs. James H. Pritchett, Mrs. D. P. Hall, Mrs. Franklin Jelsma, Mrs. Fred W. Caudill, and Mrs. Robertson O. Joplin.

OFFICERS, WOMAN'S AUXILIARY TO THE JEFFERSON COUNTY MEDICAL SOCIETY, LOUISVILLE

President—Mrs. Richard T. Hudson.
President-Elect—Mrs. Bernard Asman.
Vice-President—Mrs. Oliver H. Kelsall.
Secretary—Mrs. Octavus Dulaney.
Parliamentarian—Mrs. J. Paul Keith.
Press and Publicity—Miss Grace Stroud.

OFFICERS, WOMAN'S AUXILIARY TO THE KENTUCKY STATE MEDICAL ASSOCIATION

President—Mrs. John M. Blades, Butler.
President-Elect—Mrs. John G. South, Frankfort.
First Vice-President—Mrs. John B. Floyd, Louisville.
Second Vice-President—Mrs. Russell E. Kinsey, Williamstown.
Third Vice-President—Mrs. Evan LaRue Garrett, Murray.
Fourth Vice-President—Mrs. Frank K. Sewell, Jackson.
Secretary—Miss Grace Stroud, Louisville.
Treasurer—Mrs. Luther Bach, Bellevue.

GOLF TOURNAMENT

The twentieth annual golf tournament for men of the Southern Medical Association will be held at the Louisville Country Club, Louisville. The tournament will consist of one eighteen hole round of medal play, and may be played Tuesday afternoon or any time Wednesday and Thursday, November 12-13-14. A player must specify his handicap before starting his tournament round. Each golfer should wear the official badge when visiting the golf club.

The four major trophies will be played for again this year. The *Daily Oklahoman* Cup, in play since 1938, for low gross, junior class (physicians under 50 years of age). The Ralston Purina Cup, in play since 1935, for low gross, senior class (physicians over 50 years of age). The Schwarzschild Trophy, in play since 1933, for runner-up in low gross. The *Dallas Morning News* Cup, in play since 1925, for the net handicap tournament. All these trophies are to be played for each year until won three times in succession by the same golfer.

In addition to the four major trophies there will be other prizes offered by local business firms for the lowest number of putts on eighteen holes, the highest number of putts on eighteen holes, the highest score on eighteen holes, the lowest score on blind hole and kicker's handicap.

Those in attendance at the Southern Medical Association meeting and wearing the official badge will be accorded playing privileges at the Louisville Country Club, the Audubon Country Club and the Big Springs Country Club, greens fees $2.00.

Dr. D. Y. Keith, 1010 Heyburn Building, Louisville, is Chairman of the Golf Committee, and associated with him are Dr. Albert L. Bass and Dr. Byron Bizot.

TRAP AND SKEET SHOOTING TOURNAMENT

The fifteenth annual trap shooting tournament of the Southern Medical Association, to which skeet has been added in recent years, will be held over the traps of the Highland Park Gun Club on Crittenden Drive, one mile south of the City limits, Louisville, on Wednesday, November 13, at 1:00 p. m. Cars to convey shooters to the field will leave the Brown and Kentucky Hotels promptly at 12:30 p. m. Those shooters desiring transportation should so indicate at registration headquarters.

The program will consist of 100 targets, standard 16-yard rise, and fifty targets of skeet.

Trophies

One hundred 16-yard targets. The major trophy, a leg on the *Atlanta Journal* Bowl, to be shot for each year until a leg is won three times by the same shooter, and which has been competed for since 1926, will be in competition again this year, the leg to go to the high gun in 100 targets. High gun in addition will also receive a prize, but will not be eligible for class prize.

Additional prizes will be awarded in three classes, A, B and C.

Fifty skeet targets. The major trophy, a leg on the Sharp & Dohme Bowl, to be shot for each year until a leg is won three times in succession by the same shooter, and which was in the shoot three years ago for the first time, will be in competition again this year, the leg to go to the high gun in 50 targets. High gun in addition will also receive a prize, but will not be eligible for class prize.

Additional prizes will be awarded in three classes, A, B and C.

High overall, 100 16-yard targets and 50 skeet targets. The major trophy, a leg on the Mallinckrodt Chemical Works Bowl, to be shot for each year until a leg is won three times in succession by the same shooter, and which has been competed for since 1935, will be in competition again this year, the leg to go to the high gun overall. High gun overall in addition will also receive a prize.

Classes

Lewis Class Division of the trophies. All shooters classify themselves into classes A, B and C by their scores made in the events.

Rules

With the exception of the methods used in classifying shooters, A.T.S.A. and N.S.S.A. rules will govern.

Shooting will start promptly at 1:00 p. m., and it is most essential that everyone be on time; otherwise the program cannot be finished before dark.

A referee will call dead or lost targets after each shot; he will interpret all rules; his decision will be final.

All ties will be shot off at twenty-five targets.

The Committee requests shooters to bring their own guns, but will have on hand several trap and skeet guns which will be available when desired, at no extra cost to the shooter. Shells of all popular makes and gauges will be on sale on the club grounds.

Dr. James S. Lutz, 4349 Park Boulevard, Louisville, is Chairman of the Trap Shooting Committee, and associated with him are Dr. J. B. Stroud, Dr. Ira N. Kerns, Dr. Benj. D. Choate, Dr. W. E. Fallis, and Dr. J. W. Fitch.

TECHNICAL EXHIBITS

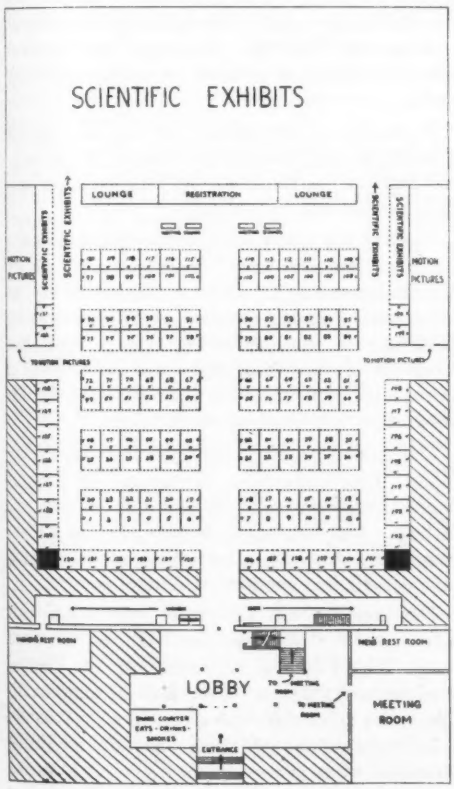
Armory

The Technical Exhibits, always a feature of the annual meeting, will be up to the usual high standard for the Louisville meeting. There will be uniform booths and the whole layout will be found very attractive. The Technical Exhibits are very definitely a scientific and educational part of the annual meeting, where much can be learned. The physicians will find the exhibitors courteous and anxious to answer any questions that may be asked, no physician being solicited to purchase any item.

Here follow the names of the firms who have reserved space and their space number:

	Space No.
Abbott Laboratories, North Chicago, Ill.	35- 36
Agfa Ansco Corporation, Binghamton, N. Y.	121-122
Aloe Company, A. S., St. Louis, Mo.	7-8-9-10
American Hospital Supply Corp., Chicago Ill.	137
American Optical Company, Southbridge, Mass.	23- 24
American Safety Razor Corp., Brooklyn, N. Y.	89
Armour Laboratories, The, Chicago, Ill.	41
Aznoe's Nat'l Physicians' Exchange, Chicago, Ill.	1
Bard-Parker Company, Inc., Danbury, Conn.	116
Bausch & Lomb Optical Company, Rochester, N. Y.	13-14-15
Becton, Dickinson & Company, Rutherford, N. J.	60
Bilhuber-Knoll Corporation, Orange, N. J.	67- 68
Borden Company, The, New York, N. Y.	110
Burdick Corporation, The, Milton, Wis.	140
Carnation Company, Oconomowoc, Wis.	71- 72
Cerevim Products Corporation, New York, N. Y.	133
Ciba Pharmaceutical Products, Inc., Summit, N. J.	49- 50
Clapp, Inc., Harold H., Rochester, N. Y.	51- 52
Davies, Rose & Company, Ltd., Boston, Mass.	111
Davis & Geck, Inc., Brooklyn, N. Y.	34
Davis Sales Company, R. B., Hoboken, N. J.	63
Devereux Tutoring Schools, Berwyn Pa.	86
De Vilbiss Company, Toledo, Ohio	94
Doak Company, The, Cleveland, Ohio	95
Doho Chemical Corporation, The, New York, N. Y.	70
Duke Laboratories, Stamford, Conn.	96
Eastman Kodak Company, Rochester, N. Y.	149-150
Fischer & Company, Inc., H. G., Chicago, Ill.	132
Foregger Company, The, New York, N. Y.	84
General Electric X-Ray Corporation, Chicago, Ill.	142-143-144
Gradwohl Laboratories, St. Louis, Mo.	88
Heinz Company, H. J., Pittsburgh, Pa.	131
Hoffmann-LaRoche, Inc., Nutley, N. J.	128-129
Hynson, Westcott & Dunning, Inc., Baltimore, Md.	43- 44
Irradiated Evaporated Milk Institute, Chicago, Ill.	138
Johnson & Johnson, New Brunswick, N. J.	65- 66
Kalak Water Company, New York, N. Y.	87
Kelley-Koett Manufacturing Co., Covington, Ky.	134-135
Knox Gelatine Company, Johnstown, N. Y.	45- 46
LaMotte Chemical Products Co., Baltimore, Md.	136
Lea & Febiger, Philadelphia, Pa.	61
Lederle Laboratories, Inc., New York, N. Y.	90
Libby, McNeill & Libby, Chicago, Ill.	119
Liebel-Flarsheim Company, The, Cincinnati, Ohio	62
Lilly & Company, Eli, Indianapolis, Ind.	97-98-99-100-101-102
Lippincott Company, J. B., Philadelphia, Pa.	85
M & R Dietetic Laboratories, Inc., Columbus, Ohio	31- 32
Macmillan Company, The, New York, N. Y.	109
Majors Company, J. A., New Orleans, La., and Dallas, Tex.	6
Mallinckrodt Chemical Works, St. Louis, Mo.	47
Maltbie Chemical Co., The, Newark, N. J.	126
Mead Johnson & Company, Evansville, Ind.	112-113-114
Medical Bureau, The, Chicago, Ill.	115
Mellin's Food Company, Boston, Mass.	42

Merck & Company, Rahway, N. J. 77– 78
Merrell Company, The Wm. S., Cincinnati, Ohio 17– 18
Mosby Company, C. V., St. Louis, Mo. 91-92-93
Mueller & Company, V., Chicago, Ill. 48
Muller Laboratories, The, Baltimore, Md. 69
Parke, Davis & Company, Detroit, Mich. 103-104-105-106-107
Patterson Screen Company, Towanda, Pa. 64
Pet Milk Company, St. Louis, Mo. 75– 76
Petrolagar Laboratories, Inc., Chicago, Ill. 25– 26
Picker X-Ray Corporation, New York, N. Y. 123-124-125
Prior Company, Inc., W. F., Hagerstown, Md. 120
Puritan Compressed Gas Corporation, Kansas City, Mo. 16
Radium Emanation Corporation, New York, N. Y. 118
Riedel-de Haen, Inc., New York, N. Y. 33
S.M.A. Corporation, Chicago, Ill. 27-28-29-30
Sanborn Company, The, Cambridge, Mass. 40
Sandoz Chemical Works, Inc., New York, N. Y. 11– 12
Saunders Company, W. B., Philadelphia, Pa. 5
Schering Corporation, Bloomfield, N. J. 2
Searle & Company, G. D., Chicago, Ill. 73– 74
Sharp & Dohme, Philadelphia, Pa. 79-80-81-82-83
Smith, Kline & French Lab., Philadelphia, Pa. 38– 39
Spencer Lens Company, Buffalo, N. Y. 21– 22



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Southern Medical Journal

JOURNAL OF THE

SOUTHERN MEDICAL ASSOCIATION

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M. Y. DABNEY, M.D., Editor
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Volume 33 NOVEMBER 1940 Number 11

EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Thirty-Fourth Annual Meeting
Louisville, Kentucky, November 12-15, 1940

THE LOUISVILLE MEETING

The heritage of being an American is the envy of a large portion of the world's people today; for freedom, taken in this country as a matter of course, in other lands is a fairy story. Practically no one in Europe today could voluntarily decide to attend a medical convention and carry out his plan. No one has that choice.

The Louisville meeting is something that most physicians are happy to choose to attend.

The history of medical education in Kentucky is as old as that of any Southern state. It dates back to 1799, when the famous old Transylvania University Medical School, the oldest medical school west of the Alleghenies, was founded. In 1837, the Louisville Medical Institute was established, the oldest municipal university in America, whose faculty included names famous in American medical annals.

The University of Louisville Medical School had its beginning in the Institute, rechristened in 1846. Its expansion has been rapid during the days since the organization of the Southern Medical Association. A description of its present activities, and of the many fine hospitals of Louisville, appears in this issue of the JOURNAL.

As a center for medical training, Louisville has been noted for many years. Conventions there have always been successful. The great Jefferson County Armory will comfortably house the Southern Medical convention, its many exhibits, and a considerable number of its sections. Hotels are convenient and comfortable.

The schedule for this year, which may be read in detail beginning on page 1211 of this issue of the JOURNAL, is similar to that used in other years. Tuesday, the opening day, will be Louisville Day, and programs will be presented by the medical profession of the host city. There will be four medical and four surgical sections, one upon obstetrics and gynecology, and one upon ophthalmology and otolaryngology.

On Tuesday evening, a program has been arranged largely for the benefit of the laity. This general public session is to be held at the Memorial Auditorium, and is intended to bring about a closer tie between physician and patient through instructive lectures on pertinent health topics.

Beginning on Wednesday morning the regular programs of the nineteen sections of the Association and the programs of the four conjoint sessions will go into full swing.

Topping the social and business portion of the meeting is the President's reception and ball on Wednesday evening. Prior to the reception, at the general session, election of officers will be consummated; and following this meeting, the President of the Association will be host to a formal ball for members of the Southern Medical Association and their wives and friends.

The section meetings continue through Friday noon. Thursday noon, luncheons for various medical fraternities throughout the country will be held. On Thursday evening are the alumni reunion dinners for all medical schools which have a sufficient number of alumni present.

The meeting will be earlier than usual this year: one week after election day, and the week before Thanksgiving. Because of the limited hotel accommodations that now remain available, every physician who plans to attend should make reservations at once. For an enjoyable review of what is new in medicine, in a setting of Southern hospitality, the Louisville meeting is a "must" for 1940.

CORPUS LUTEUM AND OVULATION

The females of certain strains of rats, if kept caged alone over long periods, develop a condition of spontaneous persistent estrus, in which ovulation ceases. According to Everett,[1] of Duke University Department of Anatomy, this tissue abnormality was noted in about half the segregated virgin females of his rat colony before they reached the age of six months. The normal rat, of course, has an estrual and diestrual, or interval, cycle of a few days. The rats in continuous estrus showed the characteristic vaginal cornification, directly associated with persistent large graafian follicles in the ovary. The follicles did not ovulate or form corpora lutea. Thus ovulation ceased over long periods for the isolated young animals.

Corpus luteum tends to inhibit ovulation, and this is presumably one of its functions in pregnancy. Estrus may be indefinitely postponed in adult rats during the daily administration of 1.5 to 4 milligrams of crystalline progesterone per day. Smaller amounts, as a dose of 1 milligram, have little or no effect on a normal estrous rhythm.

In the rats in prolonged estrus, the inactive phase could be induced by Everett in forty-eight hours after the injection of small amounts of progesterone; and this return of the resting stage was followed by ovulation, an effect opposite from the usual ovulation-inhibiting action of the corpus luteum. Treatment with progesterone corrected the condition of continued cornification of the vagina, and also actually brought about ovulation in animals in which the history would lead one not to expect it.

This would tend to show that a hormone's activity may be completely reversed by variation of its dosage. A large dose and a small dose may have opposite effects. The corpus luteum which ordinarily prevents ovulation, to permit the carrying on of pregnancy, can in smaller amount in a selected non-ovulating animal, induce ovulation. The question of the relation of estrogen and progesterone to the formation of ovarian cysts is again brought up, since the follicles of the segregated rats were enlarged.

Estrogens have been given in large quantities for treatment of psychic symptoms of the menopause on the basis chiefly of their activity in controlling the simpler cycle of lower animals. They are rather generally believed to be helpful in alleviating hot flashes, mental depression and despondency, and certain other symptoms of the menopause. Corpus luteum preparations have been less available and much less used. When the matter of diagnosis is simplified, perhaps these will have a more definite and valuable place.

If segregated virgin rats can be restored to a normal rhythm by corpus luteum treatment, perhaps this product has a place in combating human cyclic uterine disturbances before the menopausal period.

The tendency in treating the menopause is to use merely estrogens, and monthly rhythm in their dosage is often disregarded. Continued change of vaginal and uterine linings by alternate rise and fall of the two stimuli is normal. In women the two ovarian hormones are perhaps concerned in the general circulation and mental state, as well as in the genital tissue changes. If segregation of human females produces any of the tissue reactions of the rat, such as persistent vaginal cornification, which is capable of diagnosis, corpus luteum treatment might be beneficial to them. It might offer a useful treatment for old maids.

1. Everett, John W.: The Restoration of Ovulatory Cycles and Corpus Luteum Formation in Persistent Estrous Rats by Progesterone. Endocrinology, **27**:681 (Oct.) 1940.

ANGER DIMS THE VISION

There are a number of ways of producing experimental cataract. A few years ago it was observed in rats and monkeys maintained on a vitamin B deficient diet.[1] There are other metabolic cataracts: as after galactose feeding, after naphthalene, after reducing treatments with dinitrophenol,[2] the diabetic cataract, and as early as 1910 it was noted that following epinephrine injections there were detectable in the mouse transitory opacities of the lens. In other animals, lens opacities were noted during fright. Epinephrine, of course, since the early days of Cannon's studies, is believed to be secreted in excess as a defense reaction during anger and fear. By raising the blood sugar, through decomposition of stored glycogen, it provides energy for combat.

Suden,[3] of Boston, has recently reviewed this subject and repeated some of the investigations

1. Langston, W. C.; and Day, P. L.: Nutritional Cataract in the Norway Rat (Mus Norwegicus). Sou. Med. Jour., **26**:128, 1933.

2. Pfingst, Adolph: Sou. Med. Jour., **33**:1164 (Nov.) 1940.

3. Suden, Caroline tum: Opacities of the Lens Induced by Adrenalin in the Mouse. Amer. Jour. Physiol., **130**:543 (Sept.) 1940.

upon the effect upon the eye of epinephrine injections elsewhere in the body.

Within three to ten minutes after administration of toxic amounts of epinephrine, according to this author, a large number of her animals showed a complete absence of the light reflex. Transitory opacities appeared in the lens of one or both eyes, and these were studied by biopsy. The reaction was limited strictly to the lens.

Investigations with histamine convinced her that the action of epinephrine depended upon its release of sugar into the blood and subsequent changes in sugar metabolism. Marked dilatation of the blood vessels of the uveal tract was noted.

If epinephrine administration, or fright or anger following a visual or auditory stimulus, can cause a temporary opacity of the lens, or appearance of cataract, presumably continued production of the opacity from continuous stimulation with epinephrine might have a permanently damaging effect.

One realizes the picturesqueness and accuracy of the old expression, blind with rage, and the lesson to be learned is to avoid becoming angry. As the children say, one might freeze that way. One wonders whether Hitler, whose orations usually sound very angry, shows any early signs of cataract.

A PERFECT RECORD

The oldest living ex-President of the Southern Medical Association, as regards the date of his administration, not his birthday, is Dr. W. W. Crawford, of Hattiesburg, Mississippi, who was the fourth President and served in 1909-1910. Another remarkable record that he holds is the fact that he has attended every meeting of the Association since its organization in 1906. If there are any others with perfect attendance records they will confer a favor upon the Editor by sending in their names. The Association also would like to know the names of those physicians now living who attended the organization meeting in Chattanooga in October, 1906.

TWENTY-FIVE YEARS AGO

From Journals of 1915

Dallas Meeting of the Southern Medical Association.[1] The second week in November, at Dallas, Texas, will mark an epoch in the medical history of the South and of the Nation. During that week will be held the ninth annual meeting of the Southern Medical Association, though it is but the fourth session since the organization decided to enlarge its territory from six states to comprise all of the fifteen Southern states and the District of Columbia. * * * The Southern Medical Association * * * has expanded from less than 600 members in 1911 to nearly 5,000 in 1915, * * * the evidences of * * * medical renaissance in the South may be best seen in the scientific programs of the five sections of the Southern Medical Association. * * * The physicians who attend the meetings of the medical societies with greatest regularity not only have the reputation of being the most progressive physicians, but they derive the largest income from the practice of their profession.

Treatment of War Wounds.[1]—Cuneo and Rolland * * * have made use of colloidal gold in the treatment of 300 cases of infected wounds during the present war. * * * The intravenous method gives the quickest results and is indicated for strong patients with resistant hearts, but it produces a reaction so violent as in some cases to cause a tendency to cardiac collapse. * * * The most valuable results were seen in the treatment of extensive injuries infected with anaerobic organisms.

Panel Physicians and Drugs.[2]—Control over any tendency toward excessive prescribing by practitioners should not be secured by an automatic surcharge of every practitioner the total cost of whose prescriptions exceeds a fixed amount per insured person, * * * but by surcharge on the present basis of practitioners prescribing extravagantly, with the elimination, however, of the interest therein of the Pharmaceutical Committee. * * * For a practitioner with 1,000 insured persons on his list, the sum of 75 pounds for drugs appeared quite reasonable. * * * Even if it were in excess of 100 pounds, which would represent the full 2 shillings per head, * * * the practitioner on showing that the money had been reasonably spent should be refunded from the Central fund for anything above the 75 pound limit.

1. Editorial. Sou. Med. Jour., 8:979, 1915.

1. Epitome of Current Medical Literature. Brit. Med. Jour., p. 20-A, Part 2, July-Dec. 1915.
2. Ibid., p. 148.

Book Reviews

Modern Medical Therapy in General Practice. Edited by David Preswick Barr, A.B., M.D., LL.D., Busch Professor of Medicine, Washington University; Physician-in-Chief, Barnes Hospital, St. Louis. In three volumes, illustrated. Baltimore: The Williams & Wilkins Company, 1940. Price, $35.00 set.

It is a difficult if not impossible task for one man to have all the knowledge that is contained in these three large volumes. It is about as difficult to edit the contributions of over one hundred authors and to allow latitude in the scope of the material without permitting a great deal of repetition to creep in. Happily Dr. Barr has hewed to the definite purpose of giving the reader

the latest in medical treatment, and has selected outstanding experts to aid him.

The description of each disease entity varies with its importance as a cause of morbidity and the medical means that are effective in its control. For the greater part the reader is expected to know the pathology and natural history of the disease. Usually a short introduction is given, a description of the disease, its clinical manifestations, and finally the therapy.

Volume I starts off with a description of psychotherapy and the fitting of the physician to the patient. Drugs are the *sine qua non* of the allopathic practitioners, so special chapters are devoted to the use of drugs, vaccines, fluid administration, diets, physiotherapy, occupational therapy and climate. In the section on drugs, while sulfapyridine is reported to be impractical to administer parenterally, no mention is made of the sodium salt which has been used with success. This salt is, however, described in a later volume under the treatment of pneumonia. There are several other procedures that are not mentioned under these general measures which are found in the detailed expositions in the later volumes. The section on dietotherapy deserves special mention for its completeness. The section on physiotherapy is well written and goes into a great deal of detail, especially of those small items which a patient will appreciate, for example: the use of pledgets of cotton over the eyes in the giving of ultraviolet therapy to avoid the goggle marks. There is a full section on disease due to physical agents, as air, heat, chemicals, intoxicants and snake bites which is very interesting.

The section on diseases of metabolism is next, and contains a large number of diets, tables of food values and recipes which are invaluable. A significant item is the early feeding of babies delivered of diabetic mothers, the reason being that in these children there may be hypertrophy of the pancreas, and they may die of hypoglycemic shock unless they are fed. The relationship of the pancreas to the various other endocrine organs is elaborated upon. Other sections are on allergy, and vitamins in which are described the findings in clinical deficiencies and their action on man in general.

The second volume contains articles on the infectious diseases. These are discussed under the organisms causing the pathology, whether bacilli, cocci, virus, spirochetes, yeasts, protozoa or metazoa. About half of the volume is devoted to these infections. Lues is accorded prominence in this section and is excellently described. The treatment recommended is that of the cooperative clinic group. The use of 0.1 c. c. of typhoid vaccine subcutaneously as a yearly prophylaxis in typhoid is recommended, and mention is made of vaccine prophylaxis in dysentery. Tribromethyl alcohol is recommended as an anticonvulsant in the treatment of tetanus. There is no mention of the collapse methods in the article on tuberculosis, though they are discussed later in the third volume under diseases of the respiratory tract. The use of sulfanilamide in gonorrhea is delayed until after the eighth or tenth day to allow the body to set up some immunity. The use of 0.2 gram of caffeine is suggested before a spinal puncture. Such methods, while ordinarily considered unimportant, are often of inestimable practical value to the tyro.

The section on diseases of the nervous system admonishes the physician to adopt a sympathetic attitude to these patients, as they can be greatly helped. There is a lively discussion on the use of aspirin and of codeine sulphate.

In the third volume we find many items of interest to the general practitioner, such a homily as the use of salt pork to stop bleeding nose. The indications for collapse therapy are delineated, the diseases of the circulatory system and their treatment is described, as are the anemias, disease of the ductless glands, the genitourinary tract and such gynecolgic, dermatologic and eye conditions as the internist might be called upon to treat. The detailed outline of fact finding in arthritis constitutes an excellent routine method of getting the utmost from diagnostic methods.

The man who practices today has a great responsibility to his patient, and should be prepared to give him the best management and the latest therapeutic aids possible. Dr. Barr's book gives to the practitioner a source from which he can derive the necessary knowledge to carry out his responsibilities. He can ill afford to be without these books.

As the Twig is Bent. By Leslie B. Hohman, M.D., Associate in Psychiatry, Johns Hopkins Medical School; Assistant Visiting Psychiatrist to the Johns Hopkins Hospital. 291 pages. New York: The Macmillan Company, 1940. Cloth $2.50.

This book is written primarily for parents and others responsible for the successful rearing of children, and it fulfills its mission in a sound common sense manner. The author discusses the various behavior patterns commonly observed in infants and children and offers advice as to the manner best used in coping with them. He believes that all habits, whether good or bad, are persisted in because some gratification is obtained thereby. He recommends that no reward should ever follow harmful behavior, and on the other hand behavior that builds character and self-reliance should invariably be rewarded by encouragement and support. He believes in punishment when indicated, although some criticism might be made of his methods in some of the instances cited. Taken as a whole, the work is well written and adopts a middle-of-the-road policy, which is sound. It can be read with profit by parents, teachers and others charged with the care of infants and children.

Diseases of the Nervous System. By W. Russell Brain, M.A., D.M. (Oxon.), F.R.C.P. (London), Physician with Charge of Out-Patients to the London Hospital. Second Edition. 950 pages, illustrated. New York: Oxford University Press, 1940.

This book differs from the usual textbook of neurology in that its first portion concerns itself with the essential basis of neurologic diagnosis: an anatomical and physiologic interpretation of clinical signs. The section is complete and well written, and can be used by not only students to obtain an understanding of clinical neurology, but by clinicians as a reference for physiologic interpretations.

The remainder of the book is clinical with excellent discussions of neurologic diseases. In addition there are two chapters concerned with the psychologic manifestations of organic nervous disease and the neuroses.

The emphasis throughout is physiologic, and this, together with the clear presentation and excellent arrangement of material, combine to make one of the better textbooks of neurology.

Psychiatry for Nurses. By Louis J. Karnosh, B.S., Sc.D., M.D., Associate Clinical Professor of Nervous Diseases, School of Medicine, Western Reserve University, and Edith B. Gage, R.N., Supervisor, Neuropsychiatric Division, City Hospital, Cleveland. 327 pages, illustrated. St. Louis: The C. V. Mosby Company, 1940. Cloth $2.75.

This book, written specifically for nurses, presents a condensed, well organized discussion of psychiatry with emphasis upon nursing for psychiatric patients. The nursing student will like this book, as it presents the fundamentals with none of the cumbersome details, and stimulates the interested student to read elsewhere for more information. It is designed to fit any nursing curriculum teaching psychiatric nursing.

Pharmacology and Therapeutics. By Arthur R. Cushny, M.A., M.D., LL.D., F.R.S., Late Professor of Materia Medica and Pharmacology in the University of Edinburgh. Twelfth Edition. By C. W. Edmunds, A.B., M.D., Professor of Materia Medica and Therapeutics in the University of Michigan, Ann Arbor, Michigan; and J.A. Gunn, M.A., M.D., D.Sc., F.R.C.P., Professor of Pharmacology and Director of the Nuffield Institute for Medical Research, University of Oxford, Oxford, England. 852 pages, illustrated. Philadelphia: Lea & Febiger, 1940. Cloth $6.50.

For forty years Cushny's Pharmacology has been enjoyed as a piece of literature as well as the most dependable of scientific standards. The last edition prepared by the original author was published in 1924. This is the fourth edition which has been revised by Edmunds and Gunn.

The style retains its pleasing savor. It is never condensed, telegraphic nor obscure, and although necessarily each drug is only briefly discussed, the facts to be presented are always well chosen, and the history of the discovery of the various preparations is never omitted.

Such a rapidly progressing subject as the secretion of the adrenal cortex, its various active products and their physiologic effects, is admirably elucidated. The newer antimalarials are well described, as are the gallbladder dyes. The section on the sulfonamide group of drugs reviews the history of their development and evaluates them in the various infections. Chemical formulas included in most of the descriptions, as for sulfanilamide, sulfapyridine, sulfathiazole, and so on, add greatly to the reference value of the volume.

The book is practical and compact, and to say that it is useful for any library is rather to understate its value.

Synopsis of the Principles of Surgery. By Jacob K. Berman, A.B., M.D., F.A.C.S., Assistant Professor of Surgery, Indiana University School of Medicine, Indianapolis. 615 pages, illustrated. St. Louis: The C. V. Mosby Company, 1940. Cloth $5.00.

This volume is brief but complete. The first fifteen chapters deal with surgical principles and such general diseases as tuberculosis, syphilis and tumors. The chapters on blood chemistry are exceptionally good from a practical surgical standpoint. There is an excellent discussion of shock. The remaining eight chapters deal with surgical diseases as they affect the individual organs and systems.

The book is an excellent one for quick reference. A practical bibliography follows each chapter, and it is amply illustrated.

Industrial Hygiene. By Various Authors. Edited by A. J. Lanza, M.D., Assistant Medical Director, Metropolitan Life Insurance Company, and Jacob A. Goldberg, M.A., Ph.D., Secretary, Industrial Hygiene Committee, New York Tuberculosis and Health Association. 743 pages, illustrated. New York: Oxford University Press, 1939. Cloth $8.50.

This work describes industrial medicine as a specialty that had a logical birth and growth in the hazards of industry, the enactment of Workman Compensation Laws and more recently the importance of employee lost time due to poor health. The various chapters bring interesting facts to the surgeon in this field as the contributors are outstanding. The topics include the organization of the department, methods and reasons for making physical examinations, descriptions of chemical hazards and how to find them, hygiene, preventive medicine, and problems that may arise under workman's compensation laws. This is an excellent guide for the industrial practitioner and will prove a real help.

Southern Medical News

ALABAMA

Dr. Louise Branscomb, Birmingham, was made a Fellow of the American College of Surgeons at the recent annual meeting.

Dr. John B. Plum, formerly of Nashville, Tennessee, has been appointed to the staff of the State Department of Health as tuberculosis clinician.

Dr. Charles J. Westover, Anniston, formerly connected with the State Department of Health, has resigned to enter private practice in Michigan.

Dr. Robert Webster Crowell, formerly of Mullins, South Carolina, has recently been appointed Health Officer of Chilton County.

Dr. Frank M. Hall, Athens, has resigned his position as Health Officer of Limestone County in order to take a year's work at Johns Hopkins School of Hygiene and Public Health. Dr. Arthur M. Shelamer, Athens, has been placed in temporary charge of the Limestone County Health Unit.

Dr. Julian W. Davis, formerly of O'Donnell, Texas, has been made Health Officer of Henry County.

Dr. Thomas T. Box, formerly Health Officer of Washington County with headquarters at Chatom, has been made Health Officer of Choctaw County with headquarters in Butler.

Dr. Isee L. Connell, Birmingham, has been appointed Health Officer of Cleburne County.

Dr. Eldridge T. Norman has been appointed Health Officer of Hale County with headquarters in Greensboro.

Dr. Marion L. Shaddix, Phenix City, has been made Health Officer of Clay County.

Dr. Fred Dawson Reynolds and Miss Violet Opal Barnett, both of Montgomery, were married August 25.

DEATHS

Dr. Julius B. Cooper, Birmingham, aged 63, died October 19 in the Veterans' Hospital at Hines, Illinois.

Continued on page 48

HOW TO CHECK DIARRHEA WITH *Wyeth's* KAOMAGMA

AT THE ONSET OF DIARRHEA . . .

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Continued from page 1240

Dr. Napoleon Strock Johnson, Clanton, aged 57, died August 30 of carcinoma of the bladder.

Dr. Louis G. Allbritton, Birmingham, aged 40, died October 4 from a tumor of the brain.

ARKANSAS

The Tenth Councilor District Medical Society met in Fayetteville recently. The following officers were elected at the conclusion of the delightful program: President, Dr. R. T. Henry, Springdale; Vice-President, Dr. C. T. Chamberlain, Fort Smith; Secretary-Treasurer, Dr. Ruth Ellis Lesh, Fayetteville. The next meeting of the Society will be at State Sanatorium.

Dr. W. F. Adams, Fort Smith, was elected Secretary of the Sebastian County Medical Society at the last meeting to succeed Dr. R. E. Weddington, who moved to Melbourne.

Dr. M. McA. Wassell, formerly of St. Charles, has returned to active duty with the U. S. Navy Medical Corps and is stationed at Key West, Florida.

Dr. D. T. Hyatt, Little Rock, has been elected a Fellow of the American College of Chest Physicians.

Dr. J. O. Boydstone, Hot Springs National Park, has entered active service as Captain, Medical Corps, United States Army, and has been assigned to Fort Benning, Georgia.

Dr. R. E. Schirmer, formerly Health Director in Mississippi County, is taking training at the United States Public Health Service Clinic in Hot Springs National Park.

Dr. Fount Richardson and Dr. Jack Butt have recently been appointed to the Health Service Staff of the University of Arkansas at Fayetteville.

Dr. B. H. Hawkins has opened a hospital at Mena.

Dr. E. M. Nixon has been appointed Director of the Mississippi County Health Unit with headquarters in Blytheville.

Dr. Paul Gray has joined the staff of Dr. Gray's Hospital at Batesville.

Continued on page 50

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Roentgenology

A comprehensive review of the physics and higher mathematics involved, film interpretation, all standard general roentgen diagnostic procedures, methods of application and doses of radiation therapy, both x-ray and radium, standard and special fluroscopic procedures. A review of dermatological lesions and tumors susceptible to roentgen therapy is given, together with methods and dosage calculation of treatments. Special attention is given to the newer diagnostic methods associated with the employment of contrast media such as bronchography with Lipiodol, uterosalpingography, visualization of cardiac chambers, peri-renal insufflation and myelography. Discussions covering roentgen departmental management are also included.

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R. B. H. Gradwohl, M.D., Director

Continued from page 48

Dr. G. H. Landers has been appointed Health Director for Independence County.

Dr. Louis K. Hundley, Warren, formerly Health Director of Bradley County, has been assigned to the Trachoma Control Service of the State Board of Health.

Dr. Albert W. Thompson, Bentonville, has been appointed Medical Director of the Benton County Health Unit.

Dr. Neil E. Compton, Warren, has been appointed Director of the Bradley County Health Unit.

Dr. Raymond E. Smallwood, Little Rock, has been appointed Director of the Garland County Health Unit.

Deaths

Dr. Edward E. Carter, Arkadelphia, aged 64, died August 7 of cerebral hemorrhage and diabetes mellitus.

Dr. William Albert Jolley, North Little Rock, aged 68, died August 2.

Dr. Steven George Harnden, Dalton, aged 72, died August 7 of heart disease.

Dr. Hermann J. G. Koobs, Rogers, aged 71, died September 3.

DISTRICT OF COLUMBIA

Col. Norman L. McDiarmid, Medical Corps, U. S. Army, has been appointed Superintendent of the Columbia Hospital for Women, Washington, to succeed the late Col. Percy M. Ashburn.

Dr. Katherine Bain, formerly of St. Louis, Missouri, has accepted an appointment as Director of the Division of Research in Child Development in the United States Children's Bureau. She will supervise research projects which the Bureau has under way in various medical schools, dealing particularly with rickets and the newborn. Her headquarters will be in Washington.

Dr. John Manley Orem, Washington, has been appointed President of Sibley Memorial Hospital to succeed the late Dr. Lewis H. Taylor.

The Syphilis Journal Club has elected the following officers for the coming year: Chairman, Dr. Henry H. Hazen; Vice-Chairman, Dr. George M. Leiby; Secretary-Treasurer, Dr. George W. Creswell, all of Washington.

Deaths

Dr. Oscar Addison Mack McKimmie, Washington, aged 72, died August 7 of uremia and cardiovascular renal disease.

Dr. Numa P. G. Adams, Washington, aged 55, died August 29 of pneumonia following an operation.

Col. Percy M. Ashburn, Medical Corps, United States Army, aged 68, died August 20.

FLORIDA

Dr. Lamar L. Lancaster, Lake Wales, has recently been appointed Superintendent of the Polk County Hospital at Bartow.

Dr. W. M. Rowlett, Tampa, recently visited clinics in New York and Boston

Dr. C. McK. Tyre, Eustis, recently spent three weeks attending clinics at Free Hospital, Brookline, Massachusetts.

Dr. William E. Ross, Jacksonville, recently visited clinics in New York and Boston.

Dr. Waldo Horton, Winter Haven, recently did special work in dermatology and syphilology at the Massachusetts General Hospital in Boston.

The St. John County Medical Society has gone "over the top" with a hundred per cent paid dues for the current year. The officers of this Society are: President, Dr. Donald T. Rankin; Vice-President, Dr. A. C. Walkup; Secretary, Dr. V. A. Lockwood; Treasurer, Dr. Reddin Britt, all of St. Augustine.

Dr. Lauren M. Sompayrac and Miss Lois Sypert Cleveland, both of Jacksonville, were married August 30.

Continued on page 52

Have you seen the informative brochure, "Citrus Fruits and Health"? Write for your free copy.

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The booklet contains typical dietary prescriptions representing Normal Carbohydrate Maintenance, Restricted Carbohydrate High Fat, Diabetic Reducing and Children's Diabetic diets.

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Please send me.....booklets.

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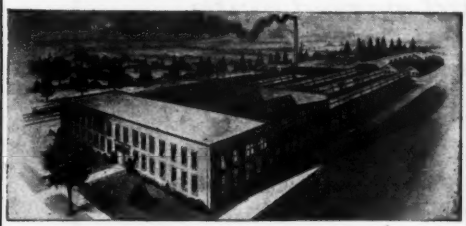

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City ..... State .....

Continued from page 50

DEATHS

Dr. Roy Jones Holmes, Miami, aged 46, died October 9 of acute coronary thrombosis.

Dr. John David Gable, Lake City, aged 67, died August 13 of arteriosclerosis and coronary heart disease.

GEORGIA

Dr. Dan C. Elkin, Atlanta, Joseph Brown Whitehead Professor of Surgery, Emory University School of Medicine, has been announced the recipient of the Matas Vascular Surgery Medal in recognition of his work in the treatment of aneurysms and wounds of the heart, the formal award to be made on November 14. The award was created by the Violet Hart Fund as a tribute to Dr. Rudolph Matas, of New Orleans, "is made to a surgeon who has made outstanding contributions in vascular surgery," and is administered by the Tulane Educational Fund and a Committee composed of Dr. Emile Bloch, Dr. Lucian H. Landry, Dr. Isidore Cohn and Dr. Alton Ochsner, all of New Orleans. The award has been made twice previously, first to Dr. Monte B. Reid, Cincinnati, and next to Professor Reynaldo dos Santos, of Lisbon, Portugal.

Dr. Aldean Starr Ingram, Atlanta, has been appointed Associate Director in the Division of Maternal and Child Health, State Department of Health, to succeed Dr. Hugh J. Bickerstaff, who resigned to accept a position with Johns Hopkins University School of Hygiene and Public Health, Baltimore.

Dr. Chester A. Hicks, formerly of Ann Arbor, Michigan, has been appointed Commissioner of Health of the district composed of Bleckley and Dodge Counties with headquarters at Eastman.

Dr. Robert C. Major announces the opening of offices in the Medical Arts Building, Atlanta, for the practice of thoracic surgery and related bronchoscopy.

Dr. W. Frank Wells, Atlanta, has recently been appointed Fulton County physician in charge of medical service for prisoners at public work camps.

Dr. Edgar H. Greene, Atlanta, has been appointed Chairman of the Committee on Medical Preparedness of the American Medical Association for the State of Georgia.

Dr. Wadley R. Glenn, Atlanta, has been elected to the Board of Directors of the Trust Company of Georgia.

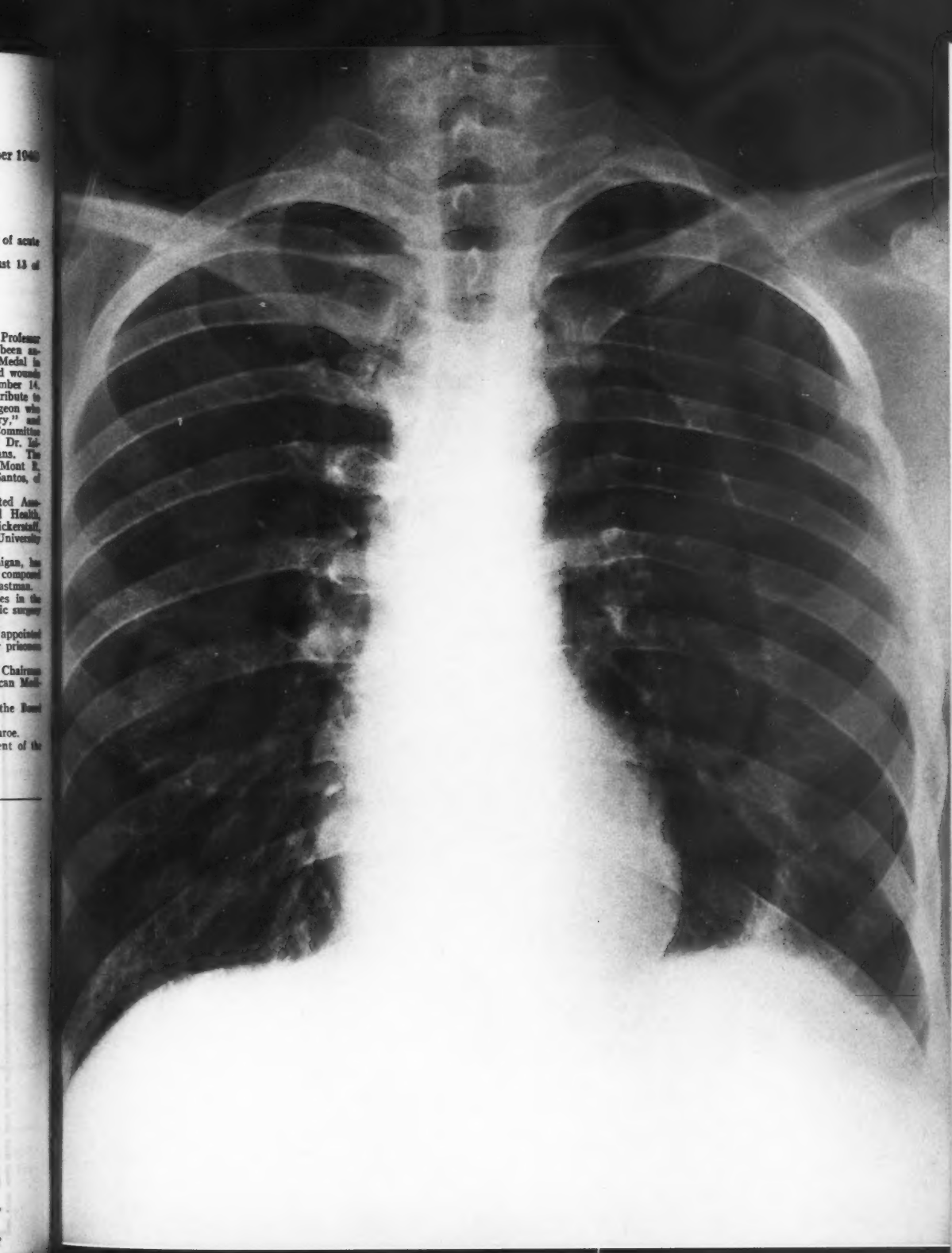
Dr. J. F. Covington has moved from Canton to Monroe.

Dr. Jack C. Norris, Atlanta, has been elected President of the American Association of Medical Milk Commissioners.

Continued on page 54

CHRISTMAS SEALS

Help to Protect Your Home from Tuberculosis



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Roentgenographic and roentgenoscopic examination of the thorax has changed the entire procedure in the treatment of diseases of the chest. Before the roentgen ray was available, diagnosis, even by one well trained in the interpretation of physical signs and symptoms, was difficult. • • •

The roentgenogram provides a study in density of the chest and we can easily identify parenchymal infiltration, lymph node enlargement, thickened pleura, fluid and innumerable other pathologic changes in the architecture of the thoracic viscera. This increased information concerning pathological conditions involving the lungs has permitted the increased use of therapeutic procedures such as thoracoplasty, pneumonolysis, pneumothorax and phrenic crushing in selected cases. In fact, most of the information necessary for proper treatment of chest diseases is obtainable roentgenographically • • •

—AM. J. ROENTGENOL., *41:* 926, June, 1939

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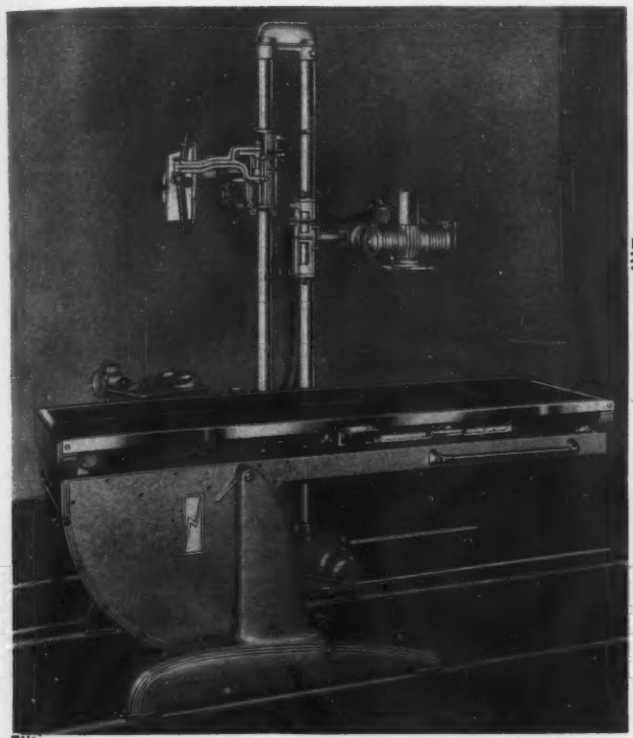
(*See reverse side of this page*)



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SEE OUR DISPLAY AT THE LOUISVILLE MEETING—SPACE 132.

Continued from page 52

Dr. O. C. Woods, Milledgeville, has been elected a Fellow of the American College of Surgeons.

Dr. William B. Armstrong and Miss Henrietta Collier, both of Atlanta, were married August 1.

Deaths

Dr. Napoleon Gustavus Gewinner, Macon, aged 82, died August 19 of acute intestinal obstruction and mesenteric thrombosis.

Dr. Willet W. Binion, Benevolence, aged 80, died August 13 of chronic nephritis and arteriosclerosis.

Dr. Pleasant H. Askew, Sr., Nashville, aged 67, died August 12.

Dr. Charles H. Meldrim, Savannah, aged 72, died August 14 of coronary occlusion.

Dr. George W. Willett, Atlanta, aged 72, died August 12 of heart disease.

Dr. John Coskery Wright, Augusta, aged 57, died August 22.

Dr. Henry Madison Tolleson, Eastman, aged 38, died September 1.

KENTUCKY

Dr. Robert L. Loftin, Pikeville, has been appointed Health Officer of a new unit in Harrison County with headquarters at Cynthiana.

Dr. Edward W. Kissel, Paintsville, has been appointed Health Officer of Lawrence County with headquarters at Louisa.

Dr. Andrew B. Steele has resigned as Clinical Director of the Western State Hospital, Hopkinsville, to join the staff of the Indiana State Welfare Department.

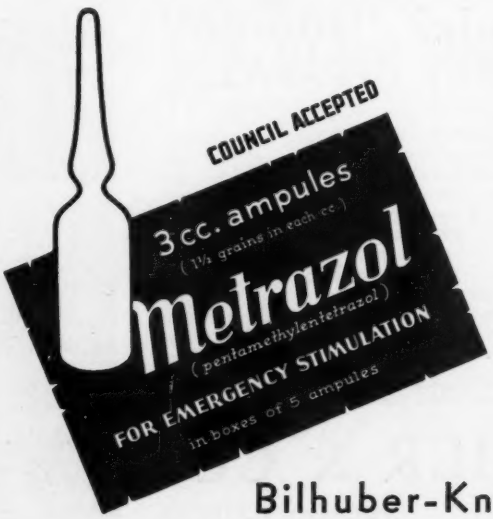
Dr. William G. Morgan, Cadiz, has been appointed Health Officer of Daviess County with headquarters in Owensboro.

Dr. Jerauld A. Campbell, formerly of Niagara Falls, New York, has been appointed Health Officer of Grayson County.

Dr. Mildred E. Burton, Berea, has been appointed Health Officer of Owsley County.

Dr. Ellis Duncan, Jr., Louisville, and Miss Marie Ernst Walmsley, Brooklyn, were married August 24.

Continued on page 56



In the emergency of deep anesthesia, collapse and barbiturate or morphine drug poisoning, inject 3 cc. Metrazol intravenously to restore the circulation and respiration. Repeat this dose, or continue with smaller subcutaneous doses.

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Thantis Season

For the relief of throat affections common in winter many physicians have found Thantis Lozenges, H. W. & D., effective.

Thantis Lozenges were developed for medical use in the treatment of throat soreness and irritation and following tonsillectomy. They dissolve slowly, permitting prolonged throat medication, reach areas inaccessible with gargles, are convenient and economical, are antiseptic and anesthetic for the mucous membranes of the throat and mouth.

Thantis Lozenges contain Merodicein, H. W. & D., 1/8 grain, and Saligenin, H. W. & D., 1 grain. They are supplied in vials of 12 lozenges each.

Thantis Lozenges, H. W. & D.

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BALTIMORE, MARYLAND

Continued from page 54

DEATHS

Dr. Henry Clay Hornsby, Burning Springs, aged 80, died August 4 of pyloric obstruction.

Dr. Julius Wesley Hill, Richmond, aged 60, died August 17 of arteriosclerosis and chronic nephritis.

Dr. Walter Clarence Simmons, Smith's Grove, aged 72, died August 23 of acute dilatation of the heart.

Dr. Thomas J. Henslee, Newburg, aged 79, died August 9 of carcinoma of the prostate.

Dr. Karl Russell, Allensville, aged 65, died August 14 of carcinoma of the face.

LOUISIANA

The Tulane Educational Fund and the Committee composed of Dr. Emile Bloch, Dr. Lucian H. Landry, Dr. Isidore Cohn and Dr. Alton Ochsner, all of New Orleans, who administer the Violet Hart Fund for the awarding of the Matas Vascular Surgery Medal, a tribute to Dr. Rudolph Matas, of New Orleans, has announced the third award to Dr. Dan C. Elkin, Atlanta, Joseph Brown Whitehead Professor of Surgery, Emory University School of Medicine, in recognition of his work in the treatment of aneurysms and wounds of the heart, the formal award to be made on November 14. The award "is made to a surgeon who has made outstanding contributions in vascular surgery." The first award was made to Dr. Mont R. Reid, Cincinnati, and the second to Professor Reynaldo dos Santos, of Lisbon, Portugal.

The following physicians have been chosen officers of the newly formed Louisiana Association of Pathologists for the coming year: President, Dr. Edwin H. Lawson; Vice-President, Dr. Bela Halpert; Secretary-Treasurer, Dr. Andrew V. Friedrichs, all of New Orleans.

Dr. Louis A. Breffeilh, Shreveport, has been assigned to the Lincoln Parish Health Unit as Director to succeed Dr. Ralph H. Allen, Ruston, who has been transferred to Amite.

Dr. William Burton Clark, Associate Professor of Ophthalmology, Tulane University School of Medicine, New Orleans, has been appointed Professor to succeed Dr. Wiley R. Buffington, who has retired to devote his full time to private practice.

Dr. Edgar Galloway, Vivian, has been made Superintendent of the Charity Hospital, Shreveport.

Dr. Marion H. Foster, Alexandria, has been appointed Superintendent of the Huey P. Long State Charity Hospital, Pineville.

Dr. Edgar Hull, Clinical Professor and Head of the Department of Medicine, Louisiana State University, Medical Center, New Orleans, has been granted a leave of absence from October 15 to May 15 of next year to accept a temporary appointment as Associate Professor of Medicine at Yale University School of Medicine, New Haven.

Dr. John H. Musser, Professor of Medicine, Tulane University of Louisiana School of Medicine, New Orleans, was recently appointed President of the Louisiana State Board of Health to serve on a part-time basis until the reorganization of the Board the first of the year. Dr. Musser succeeds Dr. Joseph A. O'Hara, who resigned after holding the position for the past twelve years.

Dr. Charles L. Brown, New Orleans, has returned from Temple University, Philadelphia, where he did postgraduate work in broncho esophagoscopy and gastroscopy under the direction of Professor Chevalier L. Jackson.

Dr. R. Alec Brown, Dr. W. H. Perkins and Dr. J. L. Wilson, all of New Orleans, were speakers recently at a meeting held to discuss means of lowering the tuberculosis mortality rate in New Orleans.

Dr. B. G. Efron, New Orleans, was recently elected to membership in the American Statistical Association.

Dr. Roy W. Wright, New Orleans, has been elected to membership in the American College of Hospital Administrators.

Dr. Edmond Chadwick Campbell, Morganza, and Miss Edna Peresich, Monroe, were married August 4.

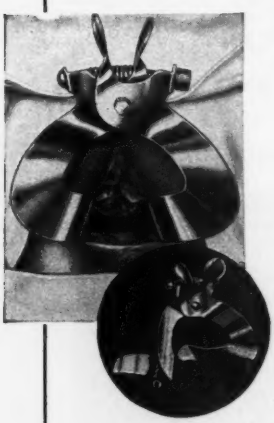
DEATHS

Dr. William Hugh Hamley, Lake Providence, aged 51, died August 6 of cirrhosis of the liver.

Dr. William David Haas, Bunkie, aged 73, died August 26 of coronary thrombosis.

Dr. Margaret Pauline H. Bowden, New Orleans, aged 63, died September 5.

Continued on page 58



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Continued from page 56

MARYLAND

Dr. Horace K. Richardson announces the opening of offices in Baltimore for the practice of psychiatry. Dr. Richardson has moved his offices from Stockbridge, Massachusetts, and New York City to 11 East Chase Street.

Dr. Hugh J. Bickerstaff, formerly of Atlanta, Georgia, has been made Associate Professor in Public Health Administration at the Johns Hopkins University School of Hygiene and Public Health, Baltimore.

Dr. Josiah S. Bowen, Head of the Baltimore County Health Department for twenty-six years, has resigned and will be succeeded by Dr. William H. F. Warthen, Assistant Health Commissioner of Baltimore.

Dr. Ralph F. Sikes, formerly with the Connecticut State Health Department, has been appointed Senior Medical Supervisor in the Bureau of Venereal Diseases in the Baltimore City Health Department.

Dr. Louis B. Flexner, Baltimore, Associate in Anatomy at Johns Hopkins University School of Medicine, has been appointed Research Associate in the Department of Embryology of the Carnegie Institution of Washington in Baltimore. Dr. Herbert A. Pohl (Ph.D.), has been appointed Research Assistant in the Department of Embryology and Dr. Alfred A. Gellhorn a Research Fellow.

Dr. John Miller Earle, 3rd, Frostburg, and Miss Archer Coke, Richmond, Virginia, were married on September 14.

Deaths

Dr. William Roe Foard, Cumberland, aged 58, died August 4 of injuries received when he was struck by an automobile.

MISSISSIPPI

Dr. Andrew Hedmeg, Natchez, Director of the Adams County Health Department, and Dr. J. P. Ward, Greenville, Director of the Washington County Health Department, have been granted a nine months' leave of absence to attend Johns Hopkins University School of Hygiene and Public Health.

Dr. E. W. Ryan, Charleston, Director of the Tallahatchie County Health Department, and Dr. R. H. Bostwick, New Albany, Director of the Union County Health Department, have been granted a three months' leave of absence to attend a short course for health officers at Vanderbilt University School of Medicine, Nashville.

Dr. Maude Gerdes, formerly with the United States Children's Bureau, Washington, D. C., is now connected with the Mississippi State Board of Health as Obstetric Consultant and Acting Supervisor of Maternal and Child Health Services.

Dr. J. W. Evans, Jr., Hernando, Director of the DeSoto County Health Department, has resigned to enter private practice. Dr. W. Arthur Vandergriff, formerly of Memphis, Tennessee, will succeed Dr. Evans.

Dr. James Barclay Donaldson, Jackson, and Miss Elizabeth Ann Gartner, Columbia, Tennessee, were married August 21.

Deaths

Dr. James G. Pou, Courtland, aged 91, died September 16.

Dr. Levi Beeman Sparkman, Cleveland, aged 94, died September 20.

MISSOURI

Dr. Evarts A. Graham, St. Louis, recently received the honorary degree of Doctor of Science at the bicentennial of the founding of the University of Pennsylvania. Others to receive degrees were: President Roosevelt, Doctor of Law; Sir Lyman Poore Duff, Chief Justice of Canada, Doctor of Law; and former President Herbert Hoover, Doctor of Civil Law.

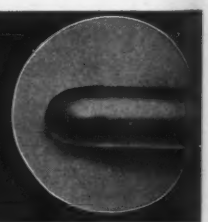
Dr. Curtis H. Lohr, St. Louis, was made a Fellow of the American College of Hospital Administrators at the recent annual meeting in Boston, Massachusetts.

Deaths

Dr. Charles Weakley Parker, St. Louis, aged 74, died August 1 of heart disease.

Continued on page 60

RADON SEEDS



FOR safety and reliability use composite Radon seeds in your cases requiring interstitial radiation. The Composite Radon Seed is the only type of metal Radon Seed having smooth, round, non-cutting ends. In this type of seed, illustrated here highly magnified, Radon is under gas-tight, leak-proof seal. Composite Platinum (or Gold) Radon Seeds and loading-slot instruments for their implantation are available to you exclusively through us. Inquire and order by mail, or preferably by telegraph, reversing charges.

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2. **PROTEINS:** Cerevim offers both milk and cereal proteins, excellent sources of the amino acids necessary for growth.
3. **MINERALS:** Cerevim is a good source of available iron which is supplied without the addition of metallic salts. It is also, we believe, the only cereal whose calcium and phosphorus are derived from Powdered Skim Milk.
4. **CARBOHYDRATES:** Cerevim furnishes carbohydrates in an easily a-similable form.
5. **FIBRE CONTENT:** Cerevim is low in crude fibre content.
6. **TASTE:** Last but not least, children like the taste of Cerevim and enjoy its delicate flavor.

Therefore, may we suggest that you prescribe Cerevim—for since Cerevim is detailed exclusively to physicians, you are the only one who can.

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Continued from page 58

Dr. Hilborn Wilton Harris, Canton, aged 76, died August 12 of coronary thrombosis.

Dr. Joseph Whitman Sherer, Kansas City, aged 70, died August 17 of injuries received in an automobile accident.

Dr. John William Leo Brennan, St. Louis, aged 58, died August 28 of hypertensive and coronary arteriosclerotic heart disease.

Dr. John Ralph Coryell, Kansas City, aged 54, died July 9 of ruptured esophageal varices and cirrhosis of the liver.

HER HEALTH IS IN YOUR HANDS

Before this child reaches maturity, Tuberculosis may be eradicated from the United States.

But remember, she is growing up in a world where Tuberculosis still causes more fatalities between the ages of 15 and 19 than any other disease!

By buying and using Christmas Seals you will enable your Local Tuberculosis Association to continue a year-round fight that has helped to reduce the death rate from Tuberculosis by 75% during the last 33 years!

So protect this child—and every child in your community.

BUY CHRISTMAS SEALS

The National, State and Local Tuberculosis Associations in the United States

Dr. Emil Edgar Hein, St. Louis, aged 49, died August 31 of cerebral hemorrhage.

NORTH CAROLINA

The North Carolina Eye, Ear, Nose and Throat Society recently held a meeting at Winston-Salem. The following officers were elected: President, Dr. R. M. Gibson, Durham; Vice-President, Dr. Thomas C. Kerns, Durham; Secretary-Treasurer, Dr. V. F. Couch, Winston-Salem. Dr. William Thornwall Davis, Washington, and Dr. Edward A. Looper, Baltimore, were the guest speakers. The Society revised requirements for membership. In the future an applicant must have passed either the American Otolaryngological or American Ophthalmological Boards. Thirteen new members were accepted into the Society.

Dr. L. P. Michell has opened offices at Spindale for the practice of medicine.

Dr. G. W. Morse, formerly of Jacksonville, Florida, is now connected with the surgical staff of Davis Hospital, Statesville.

Dr. Charles Bunch, Charlotte, has recently been made a Fellow of the American College of Surgeons.

Dr. Russell Beam, Lumberton, was recently appointed by the Governor to the Board of Trustees of the State Hospital at Raleigh.

Dr. Roy L. Noblin, Oxford, was recently appointed a member of the Board of Trustees of the Colored Orphanage of North Carolina, Oxford.

The Charlotte Memorial Hospital was dedicated on October 1 by Governor Clyde R. Hoey.

The Alamance-Caswell Counties Medical Society paid tribute at the last meeting held at Yanceville to Dr. Stephen Malloy, who has practiced medicine at Caswell for forty-two years.

Continued on page 62

Classified Advertisements

RATES for insertion in the Classified Column are as follows: $2.00 minimum, which includes the first 50 words; for each word in addition to the original 50 words, the charge is 3c.

FOR SALE—Guinea Pigs (cavies). Highest quality, foundation stock from Research Supply Corporation of Philadelphia. We maintain two distinct lineages to avoid in or line breeding; only choice fully mature animals bred; fed green vegetables and Purina feed; room ventilated and screened, hutches creosoted. Write W. N. Fleming, 6615 Sherman, Houston, Texas.

WANTED—In good condition, used eye, ear, nose and throat instruments, including optical trial case, trial frame, treatment chair, and operating instruments. Write Dept. G-92, care JOURNAL.

FOR SALE—Home-Office Practice, located in Georgia Coast city, established 15 years. Write Dept. G-960, care JOURNAL.

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STUDIES IN THE AVITAMINOSES

This page is the eleventh of a series on vitamin deficiencies presented by the research division of The Upjohn Company because of the profession's widespread interest in the subject. A full color, two-page insert on the same subject appears in the November 9 issue of The Journal of the American Medical Association.

The Gingival Manifestations of Vitamin C Deficiency

Gingival lesions are said to be among the most frequent anatomic changes occurring in scurvy. They occur only after dentition has taken place, and are most severe when the teeth are deformed or broken. The pathologic process begins as a hyperemia which is rapidly followed by destruction of the epithelium, and ulceration. Even in the early stages bleeding is readily produced by slight trauma; hemorrhages, while they do not lead to a great loss of blood, may be prolonged and difficult to control. The gum necrosis is usually accompanied by dental porosity. In the advanced stages of scurvy, the teeth are loosened due to destruction of the alveolar process, and the ulcerative lesions may extend to the mucous membrane of the cheeks and tongue. Gangrene has been described as a sequel of advanced untreated scurvy.

UPJOHN

Continued from page 60

Dr. Albert Archer Parrish and Miss Annie Marie McAdams, both of Durham, were married August 16.

DEATHS

Dr. James Monroe Peterson, Spruce Pine, aged 68, died August 19 of carcinoma of the lung.

Dr. Thad W. Shore, Booneville, aged 64, died August 16 of coronary disease.

Dr. Joe W. Neal, Walnut Cove, aged 76, died August 2 of lobar pneumonia.

Dr. Peter Hines Williams, Raleigh, aged 62, died August 23 of coronary thrombosis.

OKLAHOMA

Dr. Woodrow L. Pickhardt, formerly of Chicago, Illinois, has been appointed Health Officer of a new unit in Creek County with headquarters in Sapulpa.

Dr. Howe K. Riddle, Coweta, has been appointed Health Officer of Wagoner County, succeeding Dr. Walter R. Joblin, Porter.

Dr. James T. Bell, Woodward, has been appointed Director of the Department of Maternal and Child Health in the State Department of Health to succeed Dr. Paul J. Collopy, Oklahoma City, who resigned to join the staff of the Children's Hospital, Seattle, Washington.

Dr. Louis M. Dakil, formerly of Mayetta, Kansas, has been appointed physician to the Quapaw Indian Agency with headquarters at Miami.

The *Daily Oklahoman*, Oklahoma City, recently published a medical supplement in cooperation with the Oklahoma County Medical Association. The supplement consisted of twenty pages and was published in tabloid form.

Dr. W. Turner Bynum, Chickasha, recently received his certificate from the American Board of Internal Medicine. Dr. Bynum is the youngest doctor in the United States to receive the designation by the Board.

Dr. Bert F. Keltz, Oklahoma City, has been certified as a specialist in internal medicine by the American Board of Internal Medicine.

Dr. James Smith, Ardmore, has been appointed Secretary-Treasurer of the Carter County Medical Society by Dr. J. Hoyle Carlock, President of the Society. Dr. Smith replaces Dr. W. Doak Blassingame, who has moved to Denison, Texas, to practice medicine.

Dr. Berry Campbell, Oklahoma City, Assistant Professor of Anatomy at the University of Oklahoma School of Medicine, is on leave of absence for one year on a Guggenheim Fellowship. Dr. Russell L. Moseley, formerly with Northwestern University Medical School, Chicago, Illinois, will serve as Assistant Professor of Anatomy during the time Dr. Campbell is away.

DEATHS

Dr. John Archer Hatchett, Oklahoma City, aged 87, died August 16 of arteriosclerosis and pneumonia.

Dr. Thomas Hugh Scott, Oklahoma City, aged 61, died August 31 of cerebral hemorrhage.

Dr. Charles Robinson Hume, Anadarko, aged 92, died August 9.

SOUTH CAROLINA

A portrait of Dr. Jane Bruce Guignard, Columbia, was presented to the Columbia Hospital recently by her patients. She has practiced in Columbia for the past thirty-five years.

Dr. Lloyd W. Luttrell, Spartanburg, has been appointed Health Officer of Pickens County.

Dr. Joseph H. King, Summerton, has been appointed Health Officer of Chester County to succeed Dr. Yeadon M. Hyer, who has been transferred to Hampton and Allendale Counties.

Dr. J. D. Guess, Greenville, was elected President of the Piedmont Postgraduate Assembly held in Anderson recently.

Dr. Francis Claburn McLane, Calhoun Falls, and Miss Mary Bowers Kinsey, Waltersboro, were married August 10.

Dr. Claude K. Lincler and Miss Margaret Maxwell Ward, both of Columbia, were married August 24.

DEATHS

Dr. Orien Lee Patrick Jackson, Union, aged 68, died August 3.

Continued on page 64

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IN CHRONIC CHOLECYSTITIS
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The new, third edition of the brochure "Biliary Tract Disturbances" is based on more than 200 recently published reports and presents a concise but comprehensive review of the newer developments in the field of biliary tract disease. If you have not received your copy as yet, please write for it today.

Decholin for oral use and Decholin sodium for intravenous administration are the only chemically pure bile acid derivatives accepted by the Council on Pharmacy and Chemistry. They are single chemical entities, and because of their low toxicity and their marked choleretic influence are of established value in the treatment of chronic cholecystitis, hepatitis of toxic origin, non-calculous cholangitis, hepatic engorgement, biliary stasis. Contraindicated only in complete obstruction of the hepatic or common bile duct.

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Since the Mississippi flood in 1928, Vegex-Vitafood Dried Brewers' Yeast has increasingly become the outstanding source of Goldberger's P-P (pellagra-preventive) factor, particularly among health departments and physicians.

Initially, the President of the Company, with a long experience in food and drug administration, the author of one of the first, if not the first, of the laws against medical advertising frauds, determined to and did place the use of this yeast entirely under the direction of physicians and health departments. It has been, with the physician's other treatment, a dependable aid in lowering the pellagra death rate as comparative vital statistics are showing.

And Then

Another outstanding thing has been done. It has been demonstrated that when a product is supplied at a price which people of low incomes can pay, supplied through the wholesaler and retailer and then all treatment directed to the neighborhood physician and health department, a fatal scourge, even during the depression, through the private practitioner, is being conquered.

The Two Types

There are two types of Vegex-Vitafood Dried Brewers' Yeast, the Red Label has the hop flavor removed; the Green Label retains the hop flavor. Both types are packed in one-half pound, one, two and five pound cans or fifty and one hundred pound bags.

This yeast assays 50 International B^1 units per gram and 40 Sherman-Bourquin B^2G (riboflavin) units per gram and supplies the whole of the vitamin B complex. It is high in Goldberger's P-P (pellagra-preventive) factor including the nicotinic acid fraction.

Suggested Administration

A simple and satisfactory way for administration is a tablespoonful stirred into a glass of cold water. The debittered type is furnished in 6 grain tablet form. However, in pellagra, the powder is preferable since the daily dose would require from thirty to sixty tablets.

Vegex

Vegex is the condensed extract of approximately the whole contents of the yeast cell in a more palatable and more available form. It is meat-like in flavor—but meat free—giving wide and tasty food uses. The simplest way of serving Vegex is to dissolve a scant teaspoonful of the paste into a cup of hot water—chill in summer—or hot milk.

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Samples for clinical or professional use will be sent on request.

VITAMIN FOOD CO., INC. 122 Hudson St. New York, N. Y. **VEGEX, INCORPORATED**

Continued from page 62

TENNESSEE

The Memphis Surgical Society has elected the following officers for the coming year: President, Dr. Arthur R. Porter, Jr.; Vice-President, Dr. E. D. Mitchell, Jr.; Secretary-Treasurer, Dr. M. J. Tendler, re-elected.

Dr. James Sterling Ruffin, Jr., Knoxville, and Miss Kathryn Witherington, Covington, were married August 20.

Deaths

Dr. William A. L. McLister, Brighton, aged 78, died August 14 of carcinoma of the prostate.

Dr. N. H. Stone, Tazewell, aged 76, died August 4 of uremia.

Dr. Patterson East, Lafayette, aged 74, died August 25.

TEXAS

Dr. Sol Estes, Abilene, recently did postgraduate work in surgery and gynecology in Chicago.

Dr. R. G. Bruce, Mineral Wells, recently visited surgical clinics in New Orleans, St. Louis and Rochester, Minnesota, and is doing postgraduate work in Chicago at present.

Dr. H. M. Anderson has moved from Sanatorium to San Angelo.

Dr. Stewart H. Auerbach has moved from Jacksonville to Augusta, Georgia.

Dr. Raymond S. Borsheim has moved from San Antonio to Davenport, Iowa.

Dr. J. C. Cain has moved from Galveston to Rochester, Minnesota.

Deaths

Dr. Lawrence Robert Harris, Galveston, aged 57, died August 6 of pulmonary edema and chronic nephritis.

Dr. Joseph Archibald Robertson, Dallas, aged 65, died August 18 of coronary occlusion.

Dr. Watt Orr McDaniel, Streetman, aged 67, died in August of carcinoma of the tongue.

VIRGINIA

The Ex-Residents of Tucker Sanatorium recently presented a portrait of Dr. Beverley R. Tucker to the Medical College of Virginia. Dr. Tucker is one of the most distinguished of the alumni and recently concluded a long course of teaching at this institution.

Dr. D. Lane Elder, Hopewell, was re-elected Mayor for a term of two years. He has served as Mayor of Hopewell since 1920.

The Valentine Meat Juice Company has established a Fellowship for research work in Physiology and Pharmacology for a period of one year with a grant of $3,000.00. Dr. Nello Pace, Medical College of Virginia, Richmond, has been appointed Research Associate to fill this Fellowship for the current year.

Dr. Herbert Silvete, Charlottesville, Assistant Professor of Pharmacology, Materia Medica and Toxicology, University of Virginia, has received a grant of $250.00 from the A M A in support of his study of the antidiuretic hormone of the pituitary gland.

Dr. Francis I. Bloise, Alexandria, was recently appointed Chief Surgeon to the State Prison System on a full-time basis.

Dr. John Bolling Jones, Petersburg, has been appointed a member of the State Board of Health.

Dr. Herbert T. Wagner, Jr., formerly Assistant Director of the Roosevelt Hospital, New York, has been appointed Superintendent of the Stuart Circle Hospital, Richmond.

Dr. Lee Scott Barksdale, Hopewell, has been appointed a Committee Chairman of the Hopewell Junior Chamber of Commerce.

Dr. Edwin L. Kendig, Jr., has opened offices at 1214 West Franklin Street, Richmond, for the practice of pediatrics.

Dr. Philip R. Cronlund has been appointed Health Officer of Dickenson-Wise Health Unit with headquarters at Norton.

Dr. A. Glenn Evans has been appointed Health Officer of Montgomery County with headquarters at Christiansburg.

Dr. Thomas F. McGough has been appointed Health Officer of Northampton County with headquarters at Eastville.

Dr. W. D. Haden, Charlottesville, has been re-elected Mayor for the third term.

Dr. S. E. Hughes, Danville, founder of the Hilltop Sanatorium for tuberculosis, has resigned as Medical Director after serving in that capacity for twenty years.

Dr. A. P. Trynham, Richmond, was recently reappointed jail physician of Henrico County for a term of four years.

Continued on page 66

To Assure Quick Dependable Response
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III. CENTRI-VAC—PLASMA-VAC

- A perfected adaptation of the TRANSFUSO-VAC for the preparation of SERUM and PLASMA, therapeutic agents for which an impressive clinical record is so swiftly building up.

The wide acceptance and popularity of these fundamental Baxter units give striking evidence of the flexibility and soundness of the basic principle of the Vacoliter.

Bulletins dealing with these subjects—I, II, III—will gladly be sent on proper request. Demonstrations arranged by appointment. Write us.

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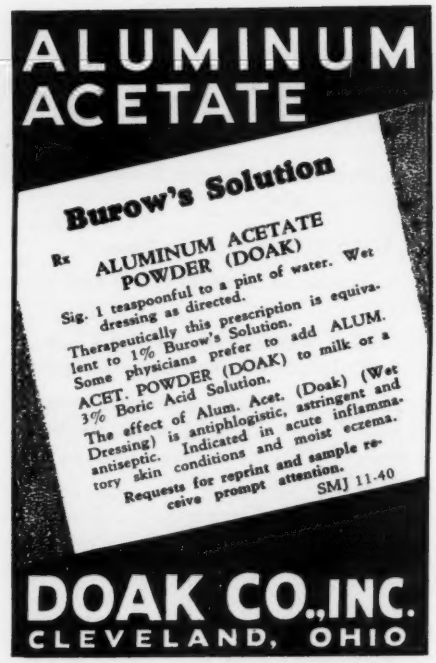
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CLEVELAND, OHIO

Continued from page 64

Dr. H. L. Hamilton has moved from Goshen to Glasgow.

Dr. Marion S. Love has moved from Charlottesville to Danville.

Dr. George Hunter Long, Luray, and Miss Helen Echols Gilkeson, Alderson, West Virginia, were married September 12.

Dr. George Austin Welchons and Miss Alene Brown, both of Richmond, were married August 24.

Dr. Gilmon Rackley Tyler and Miss Martha Glenn Davis, both of Richmond, were married August 24.

DEATHS

Dr. William E. Ford, Arlington, aged 59, died August 14 of diabetes mellitus.

Dr. Willard McKenzie Burleson, Richmond, aged 28, was killed August 31 in an airplane accident.

Dr. Rudolph Angus Nichols, Richmond, aged 67, died September 5 following a heart attack while playing golf.

Dr. Perkins Glover, Arvonia, aged 66, died September 5.

Dr. George Bruce Barrow, Staunton, aged 56, died September 1.

Dr. Hugh Smith Hart, Pamplin, aged 41, died September 12.

Dr. May Farinholt Jones, West Point, aged 74, died September 10.

WEST VIRGINIA

Dr. Leo H. Mynes, Charleston, was elected President of the West Virginia Tuberculosis and Health Association at the recent meeting in Clarksburg.

DEATHS

Dr. Rolla Camden, Parkersburg, aged 67, died August 22 of chronic nephritis.

Dr. Thomas Rogers Hoge, Wheeling, aged 45, died August 3 of seminoma of the testicle.

Dr. William Thomas Highberger, Maysville, aged 81, died September 6.

Dr. Lawson Silas Henley, Huntington, aged 68, died September 16.

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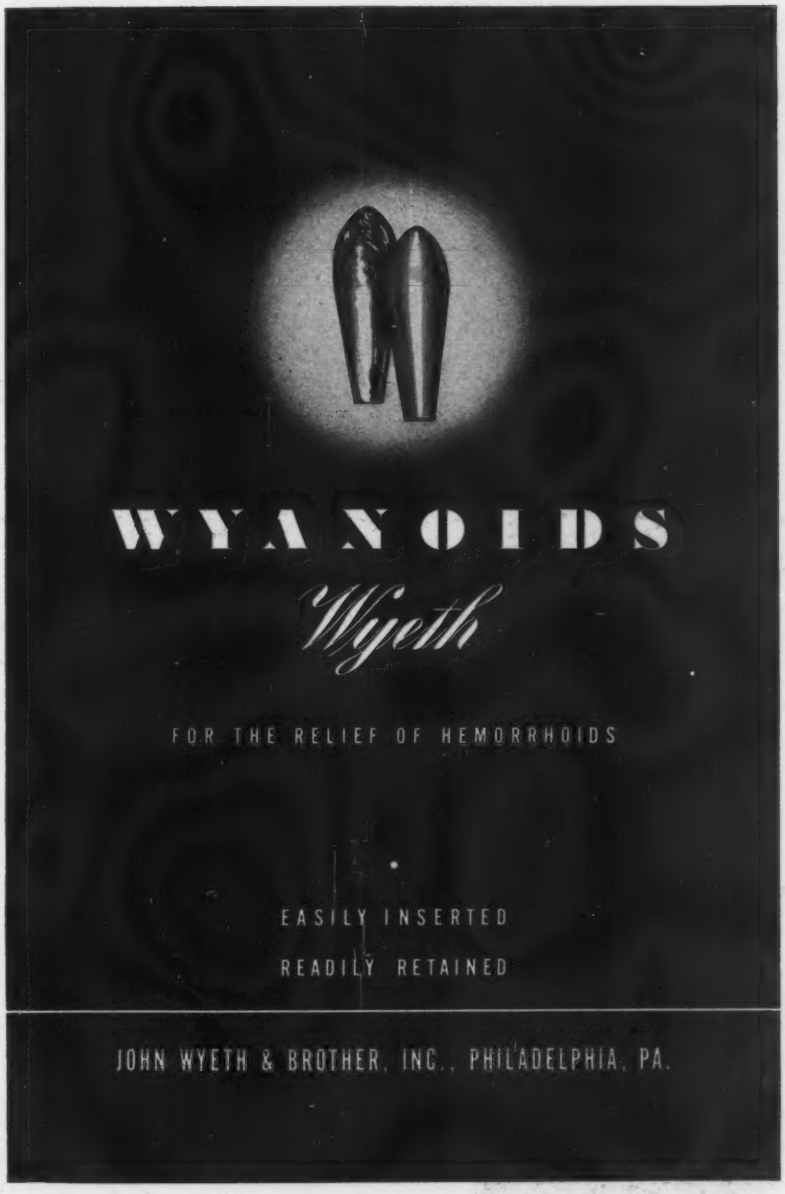
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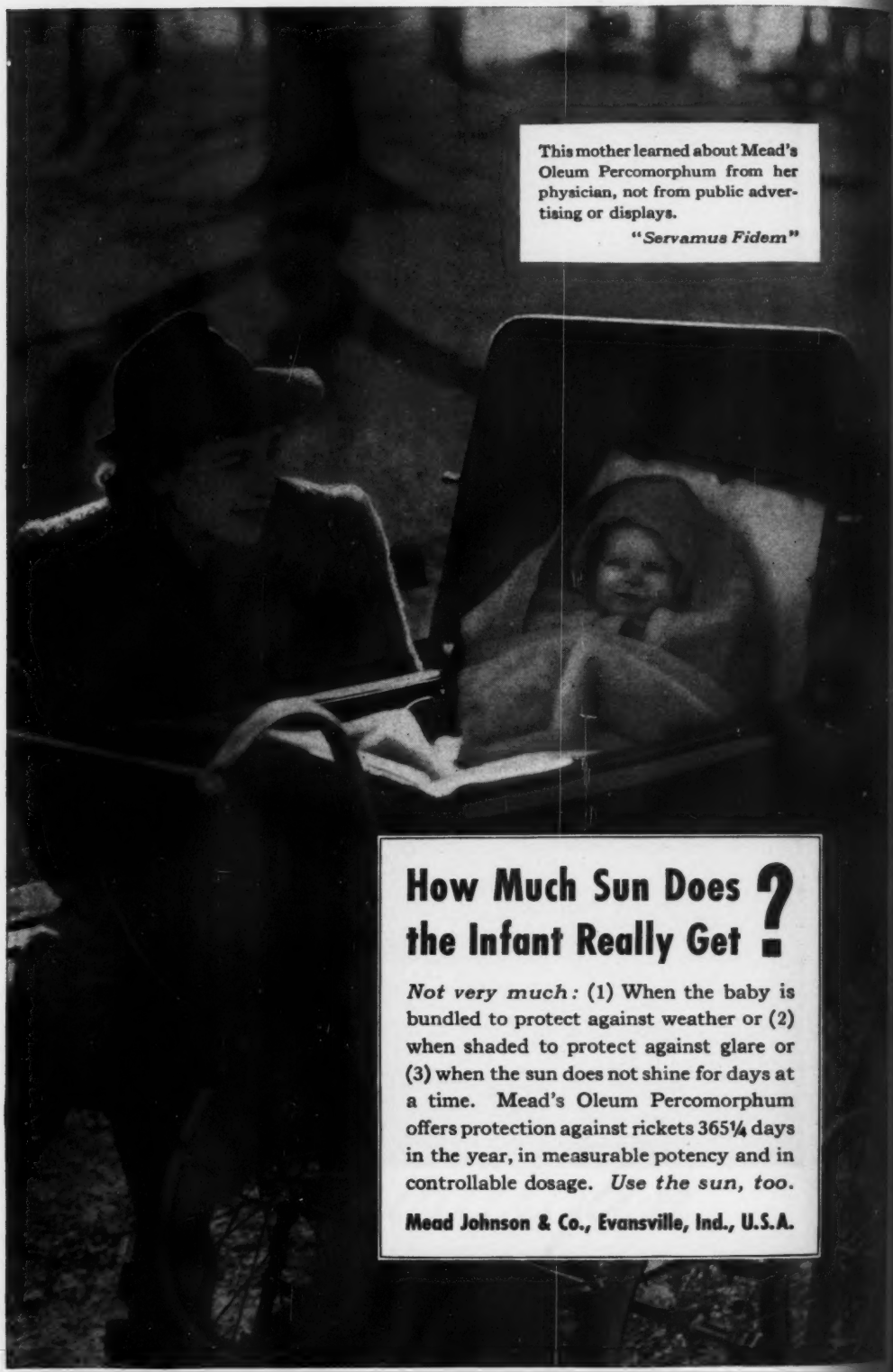
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Infant Feeding Vessels of the STONE AGE

FEEDING vessels used for babies among aboriginal American tribes are rarely found. Those illustrated here, obtained from a famous museum collection, were excavated from mounds where only babies were interred.

Since these utensils were first employed, the style of infants' feeding bottles has undergone many variations. But even more revolutionary has been the change in the feedings. It has been said that more progress was made in this direction during the past three decades than in all the centuries preceding.

It may be more than a coincidence that during most of this period the one system of infant feeding that has gained outstandingly in pediatric acceptance is the use of the diluted cow's milk formula with Dextri-Maltose as the carbohydrate.

These infant feeding vessels, newly added to the group of ancient nursing bottles owned by Mead Johnson & Company, have been obtained from Edward W. Payne's internationally known collection of stone age relics.

Left to right, top row: Crude gray feeding bottle excavated from mound builders' grave in Missouri; rare teapot-shaped feeding vessel of red pottery, from Oklahoma mounds; unpainted feeding bottle from New Madrid, Missouri.

Center row: Unglazed pottery bottle showing crude thumb-prints of the maker, from Ogdensburg, Missouri; red glazed pottery bowl from Arkansas; decorated reddish brown bottle with slight glaze, from Neutrozo Creek, Arizona.

Bottom row: Papoose spoon similar to pap boat, from Hovenweep Canyon, Colorado; tiny feeding cup (capacity only 3 tablespoons), from Arizona; gray pottery feeding bottle with brown design, also from Arizona.

When requesting samples of Dextri-Maltose, Pablum, and other Mead products, please enclose professional card to cooperate in preventing their reaching unauthorized persons. Mead Johnson & Company, Evansville, Indiana, U. S. A.

Pioneers Needed!

When an explorer leaves the beaten path, he never knows what lies ahead.

He may find only barren, worthless wastes. Or he may come upon rich deposits of minerals, or great stands of timber—completely unsuspected.

So it is with the explorer in medical research. Leaving familiar scientific landmarks behind, he never knows whether he will find disappointment, or some new fundamental principle which may greatly benefit mankind.

But in any case, his pioneering has set up significant guideposts for those who follow.

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